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(12) **United States Patent**
Ackerman

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(45) **Date of Patent: Mar. 24, 2020**

(54) **KIOSK MANAGEMENT SYSTEM**

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(73) Assignee: **Amazon Technologies, Inc.**, Seattle, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 366 days.

(21) Appl. No.: **14/038,706**

(22) Filed: **Sep. 26, 2013**

(65) **Prior Publication Data**

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(51) **Int. Cl.**
G06Q 30/06 (2012.01)
G06Q 10/08 (2012.01)

(52) **U.S. Cl.**
CPC ***G06Q 30/0603*** (2013.01); ***G06Q 10/0836*** (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

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(Continued)

Primary Examiner — Robert R Niquette
Assistant Examiner — William J Jacob
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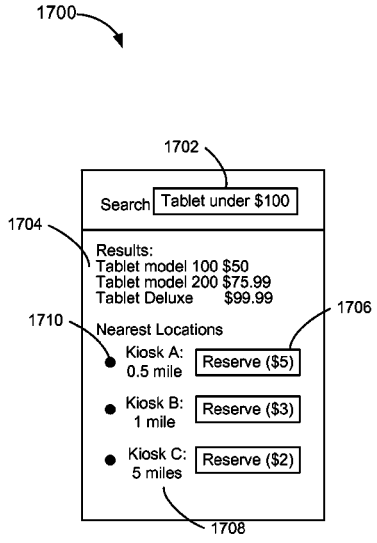
(57) **ABSTRACT**

A kiosk management system may identify items with which to pre-stock a plurality of geographically distributed kiosks. The identified items may be delivered from a distribution center to one or more distribution agents, who then deliver the identified items to individual kiosks. When the kiosk management system receives a request for an item from a consumer who has been browsing items in, e.g., an electronic marketplace, the kiosk management system can determine whether the requested item is available at any kiosks in proximity of the consumer and provide a list of such kiosks to the consumer for selection. Following selection of a kiosk by the consumer, the kiosk management system can send the consumer a notification identifying the designated kiosk and including a generated code for use by the consumer in retrieving of the requested item from the designated kiosk.

22 Claims, 23 Drawing Sheets



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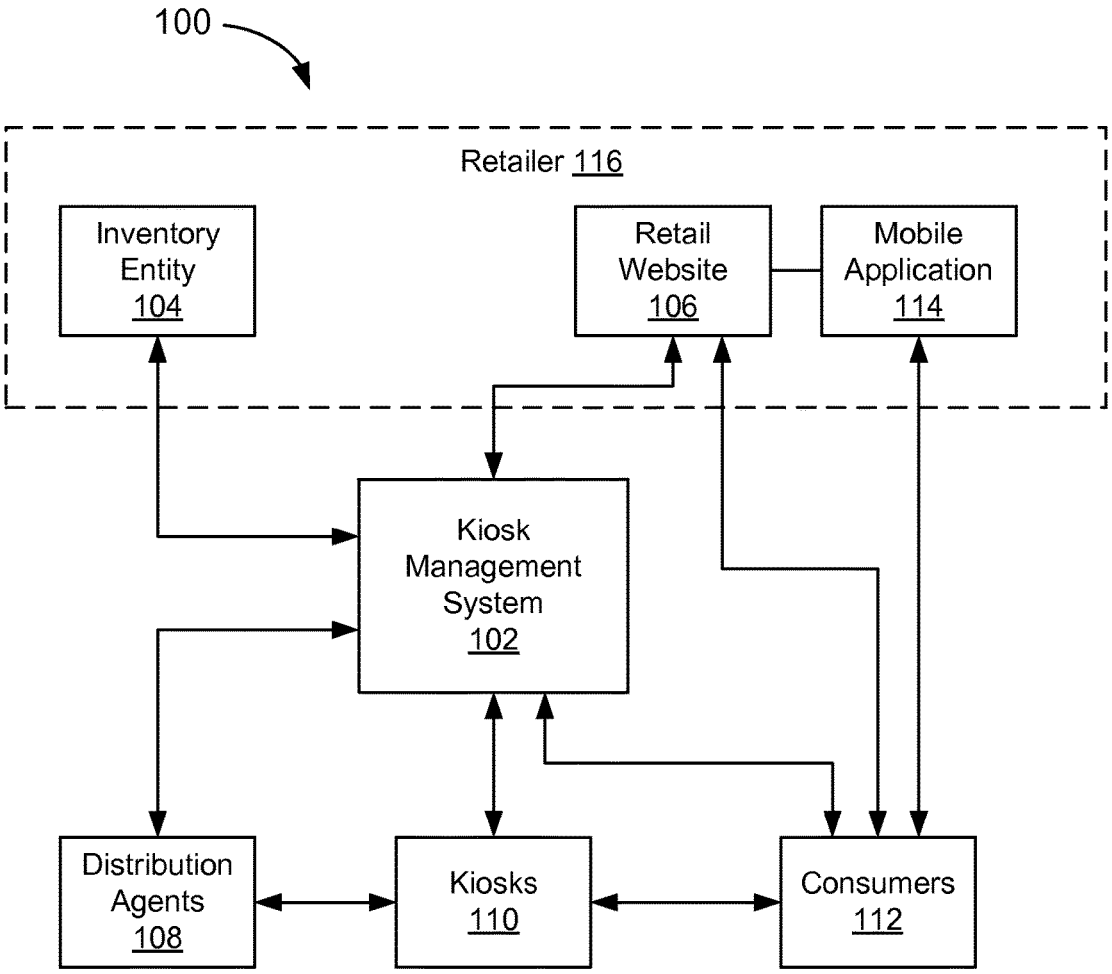
100
Retailer 116
Inventory Entity 104
Retail Website 106
Mobile Application 114
Kiosk Management System 102
Distribution Agents 108
Kiosks 110
Consumers 112

FIG. 1

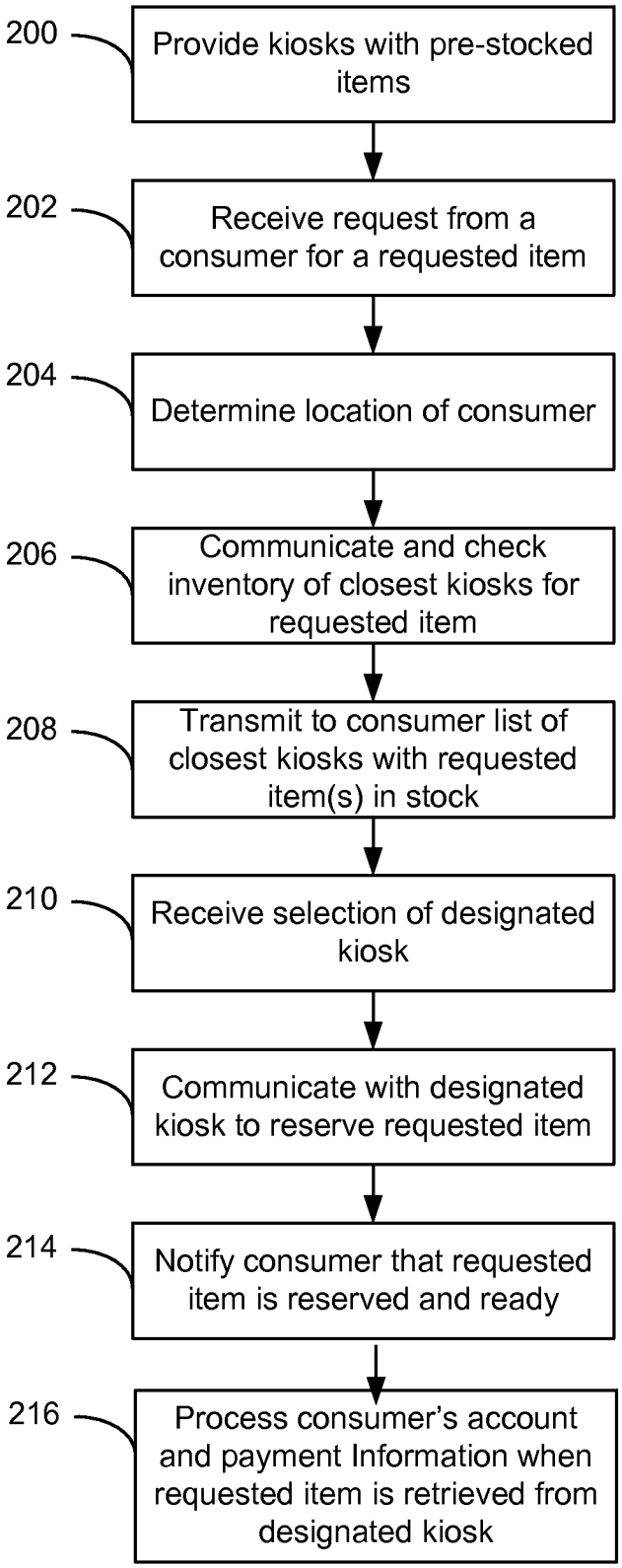
200
Provide kiosks with pre-stocked items
202
Receive request from a consumer for a requested item
204
Determine location of consumer
206
Communicate and check inventory of closest kiosks for requested item
208
Transmit to consumer list of closest kiosks with requested item(s) in stock
210
Receive selection of designated kiosk
212
Communicate with designated kiosk to reserve requested item
214
Notify consumer that requested item is reserved and ready
216
Process consumer's account and payment Information when requested item is retrieved from designated kiosk

FIG. 2

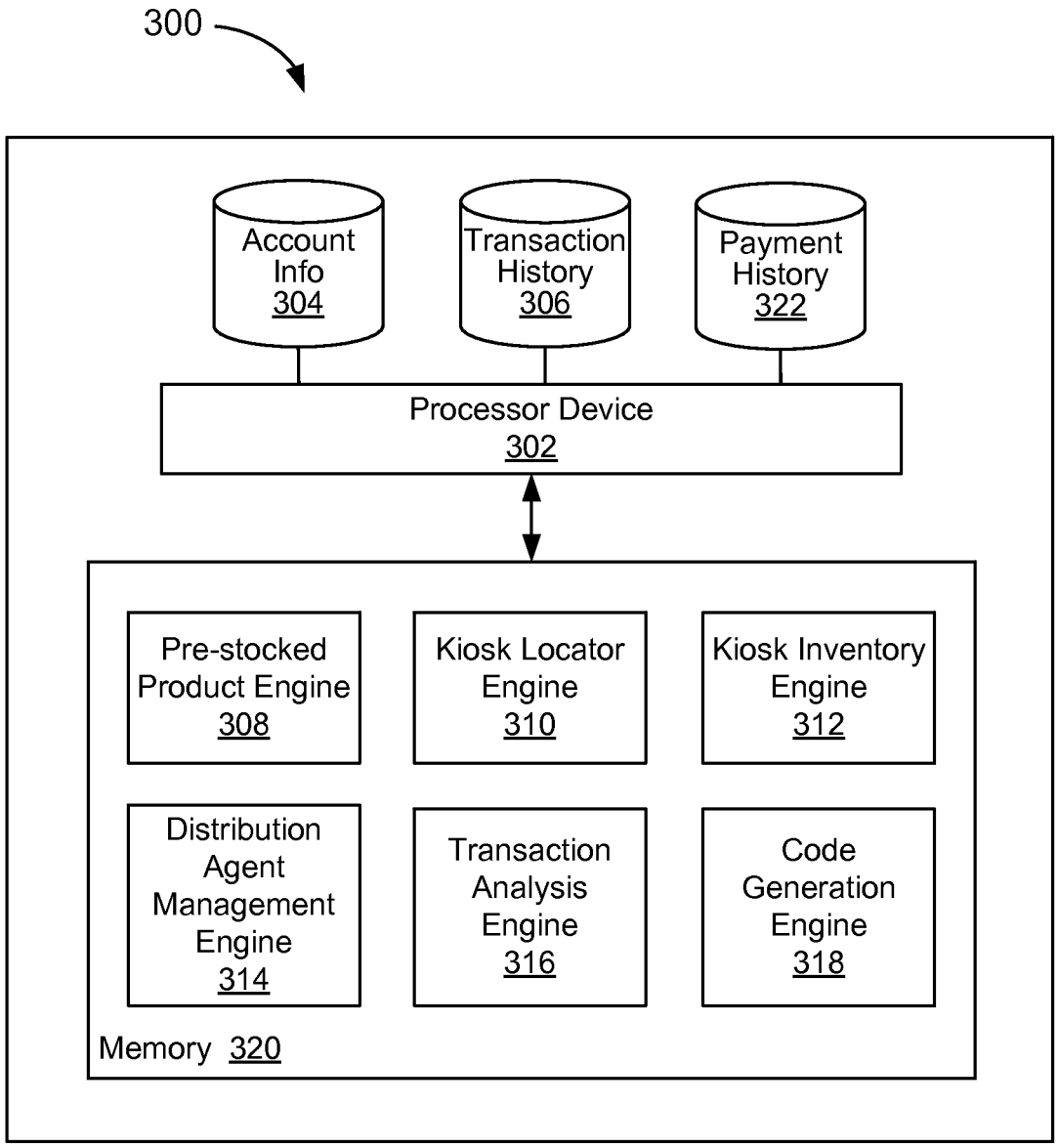
300
Account Info 304
Transaction History 306
Payment History 322
Processor Device 302
Pre-stocked Product Engine 308
Kiosk Locator Engine 310
Kiosk Inventory Engine 312
Distribution Agent Management Engine 314
Transaction Analysis Engine 316
Code Generation Engine 318
Memory 320

FIG. 3

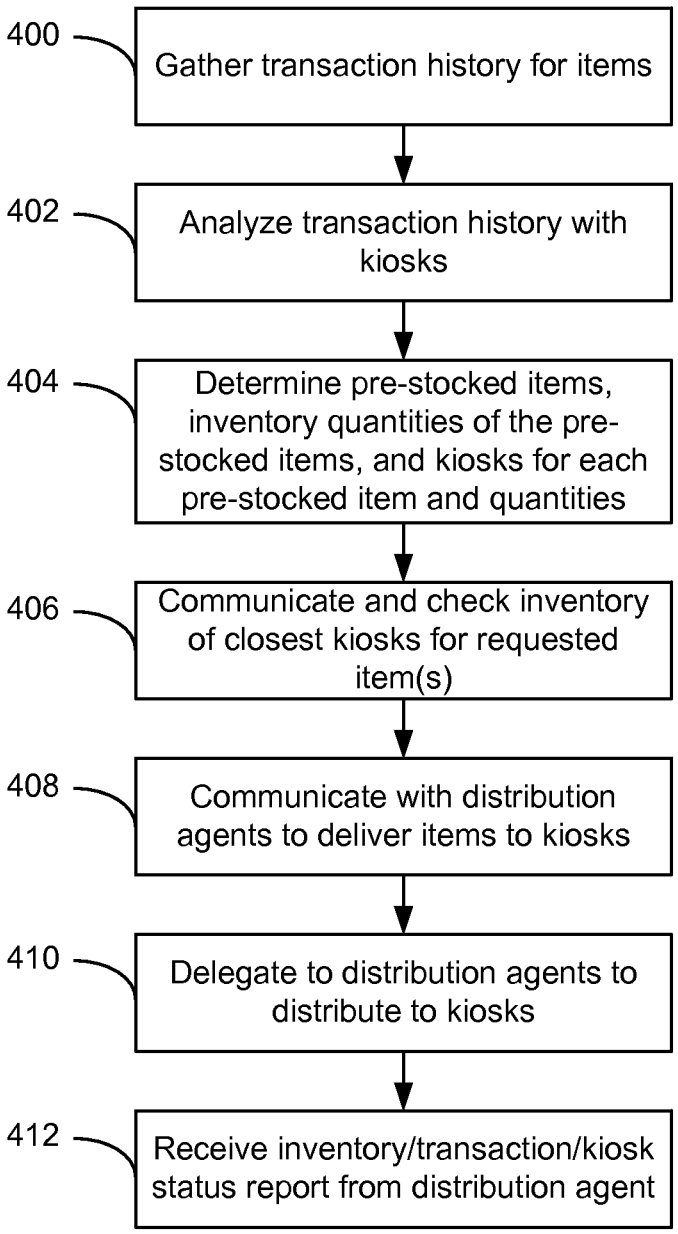
400
Gather transaction history for items
402
Analyze transaction history with kiosks
404
Determine pre-stocked items, inventory quantities of the pre-stocked items, and kiosks for each pre-stocked item and quantities
406
Communicate and check inventory of closest kiosks for requested item(s)
408
Communicate with distribution agents to deliver items to kiosks
410
Delegate to distribution agents to distribute to kiosks
412
Receive inventory/transaction/kiosk status report from distribution agent

FIG. 4

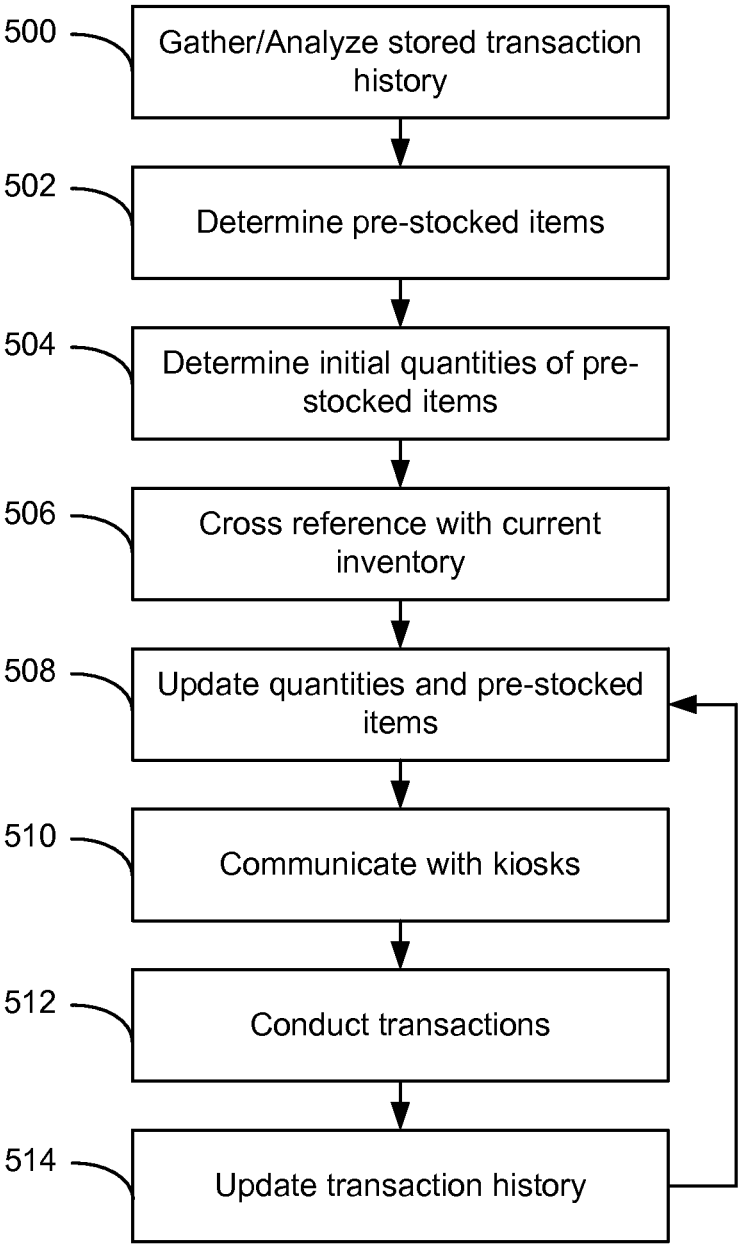
500
Gather/Analyze stored transaction history
502
Determine pre-stocked items
504
Determine initial quantities of pre-stocked items
506
Cross reference with current inventory
508
Update quantities and pre-stocked items
510
Communicate with kiosks
512
Conduct transactions
514
Update transaction history

FIG. 5

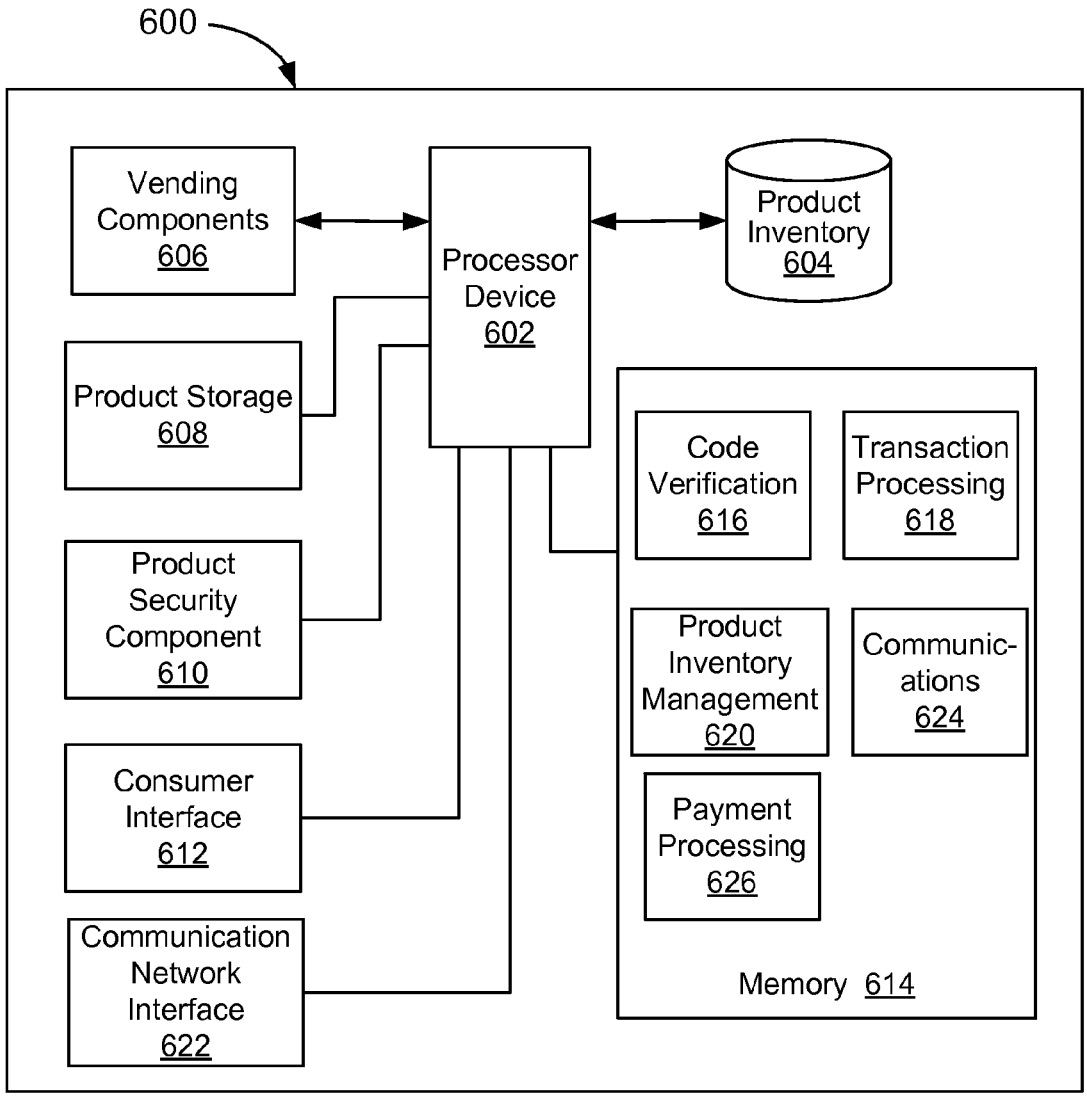
600
Vending Components 606
Processor Device 602
Product Inventory 604
Product Storage 608
Code Verification 616
Transaction Processing 618
Product Security Component 610
Product Inventory Management 620
Communic-ations 624
Consumer Interface 612
Payment Processing 626
Communication Network Interface 622
Memory 614

FIG. 6

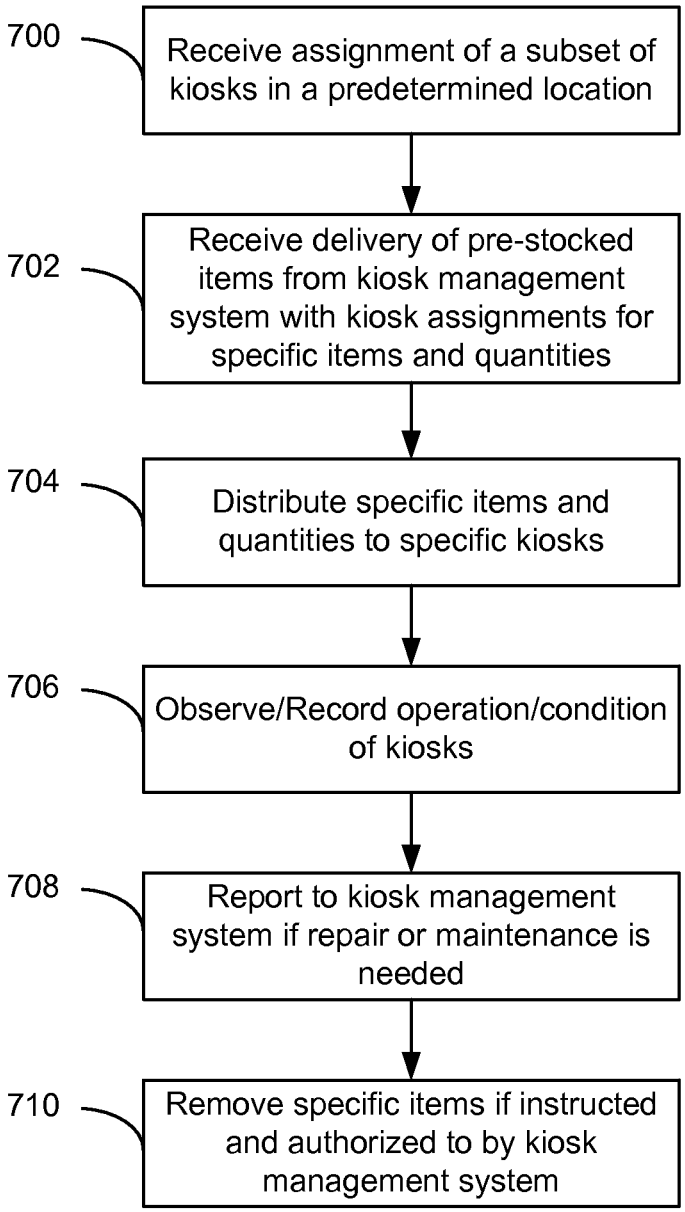
700
Receive assignment of a subset of kiosks in a predetermined location
702
Receive delivery of pre-stocked items from kiosk management system with kiosk assignments for specific items and quantities
704
Distribute specific items and quantities to specific kiosks
706
Observe/Record operation/condition of kiosks
708
Report to kiosk management system if repair or maintenance is needed
710
Remove specific items if instructed and authorized to by kiosk management system

FIG. 7

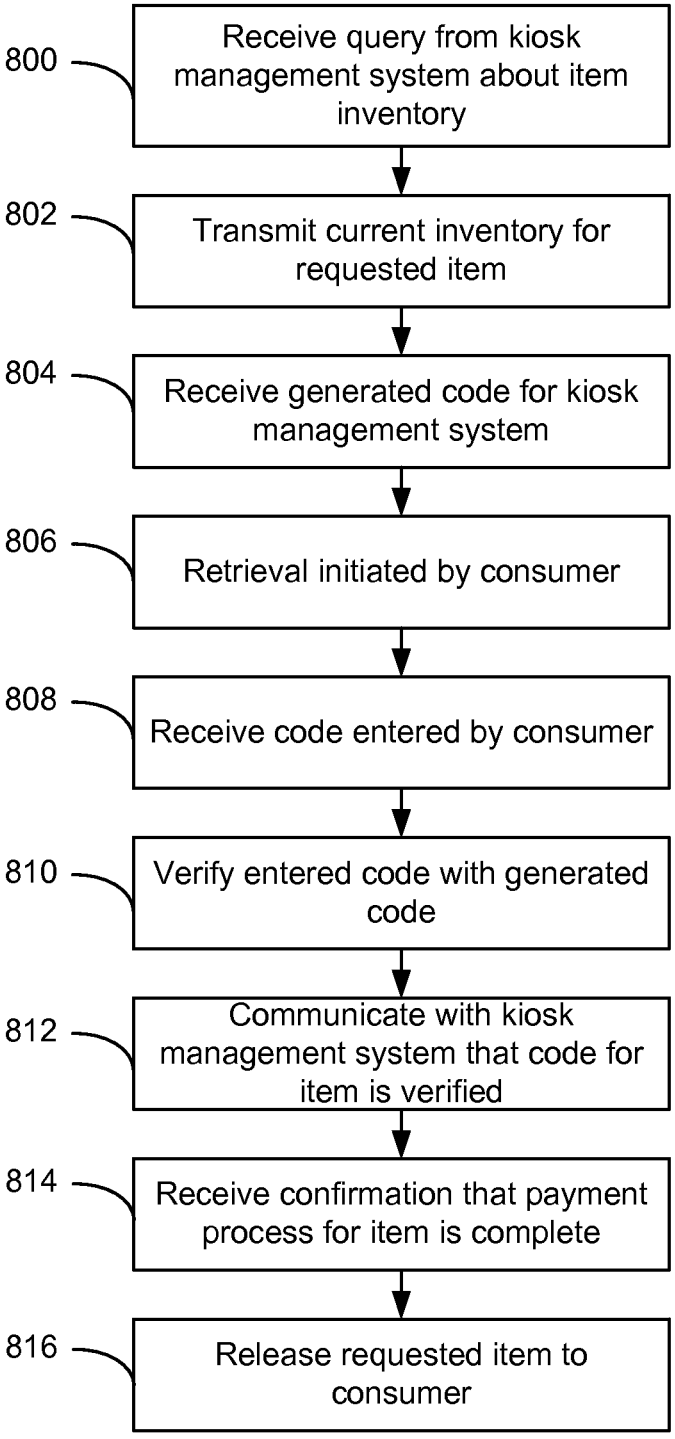
800
Receive query from kiosk management system about item inventory
802
Transmit current inventory for requested item
804
Receive generated code for kiosk management system
806
Retrieval initiated by consumer
808
Receive code entered by consumer
810
Verify entered code with generated code
812
Communicate with kiosk management system that code for item is verified
814
Receive confirmation that payment process for item is complete
816
Release requested item to consumer

FIG. 8

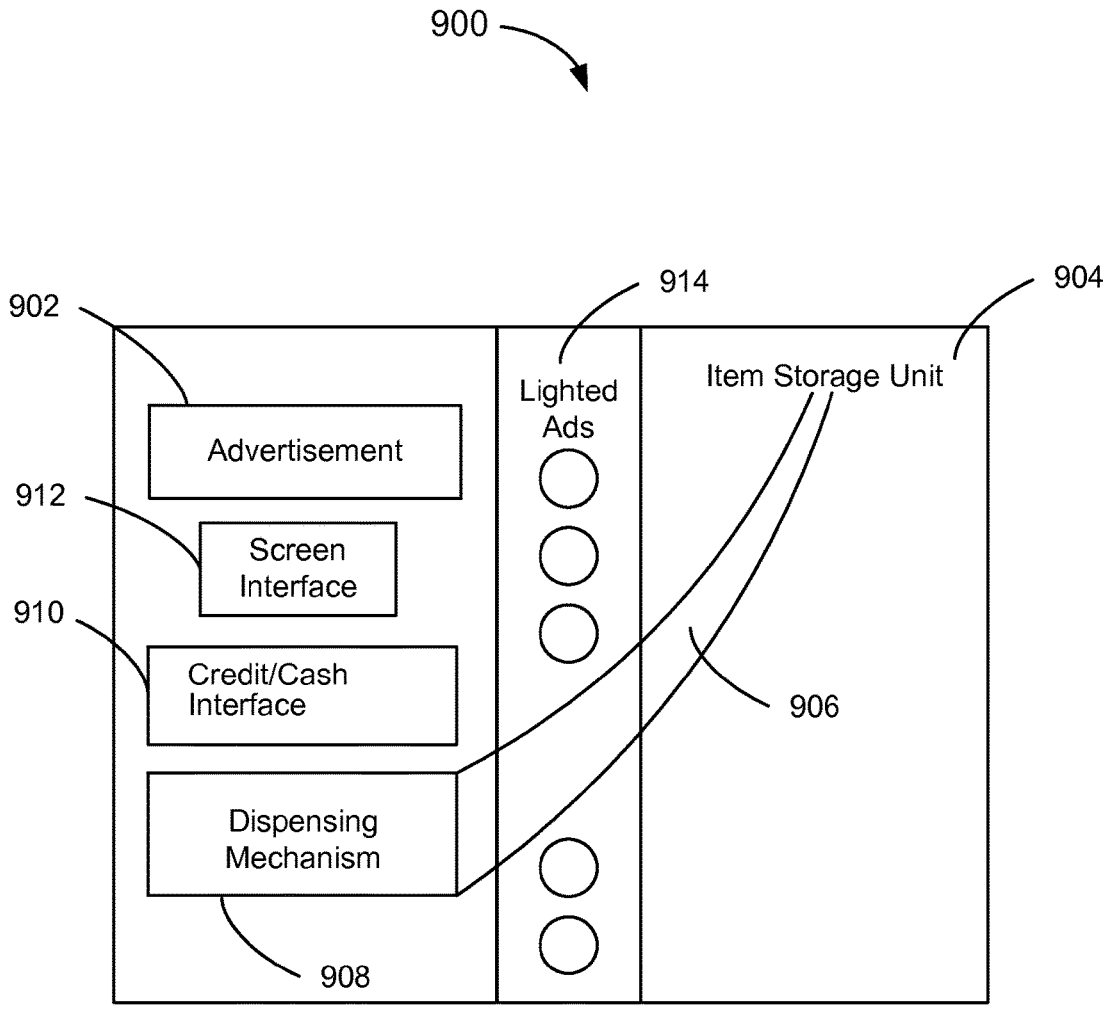
900
902
914
904
Lighted Ads
Item Storage Unit
Advertisement
912
Screen Interface
910
Credit/Cash Interface
906
Dispensing Mechanism
908

FIG. 9

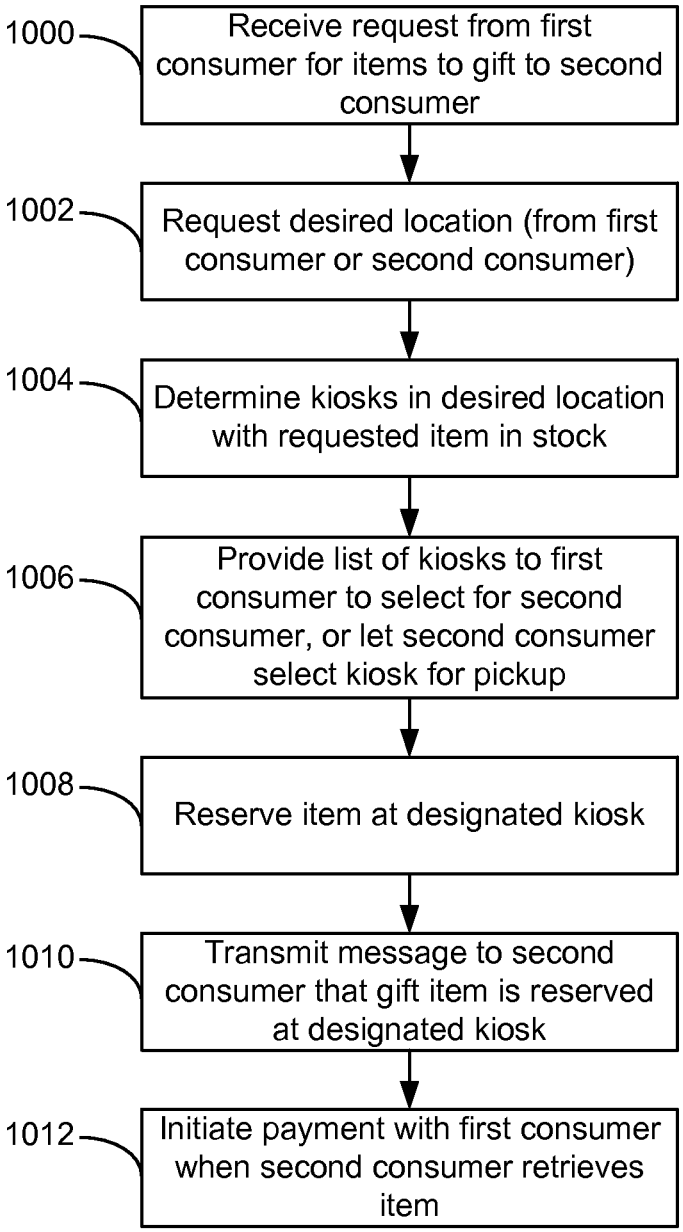
1000
Receive request from first consumer for items to gift to second consumer
1002
Request desired location (from first consumer or second consumer)
1004
Determine kiosks in desired location with requested item in stock
1006
Provide list of kiosks to first consumer to select for second consumer, or let second consumer select kiosk for pickup
1008
Reserve item at designated kiosk
1010
Transmit message to second consumer that gift item is reserved at designated kiosk
1012
Initiate payment with first consumer when second consumer retrieves item

FIG. 10

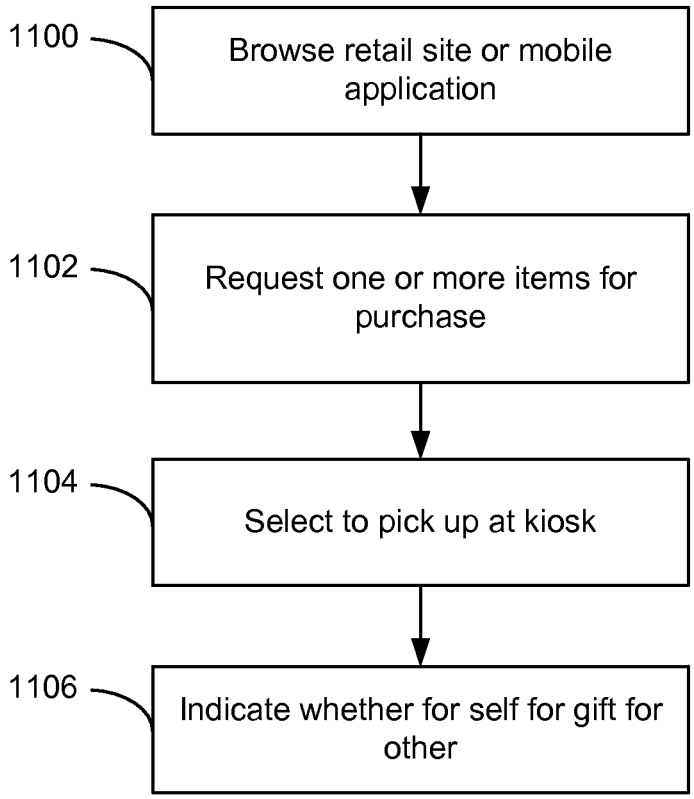
1100
Browse retail site or mobile application
1102
Request one or more items for purchase
1104
Select to pick up at kiosk
1106
Indicate whether for self for gift for other

FIG. 11

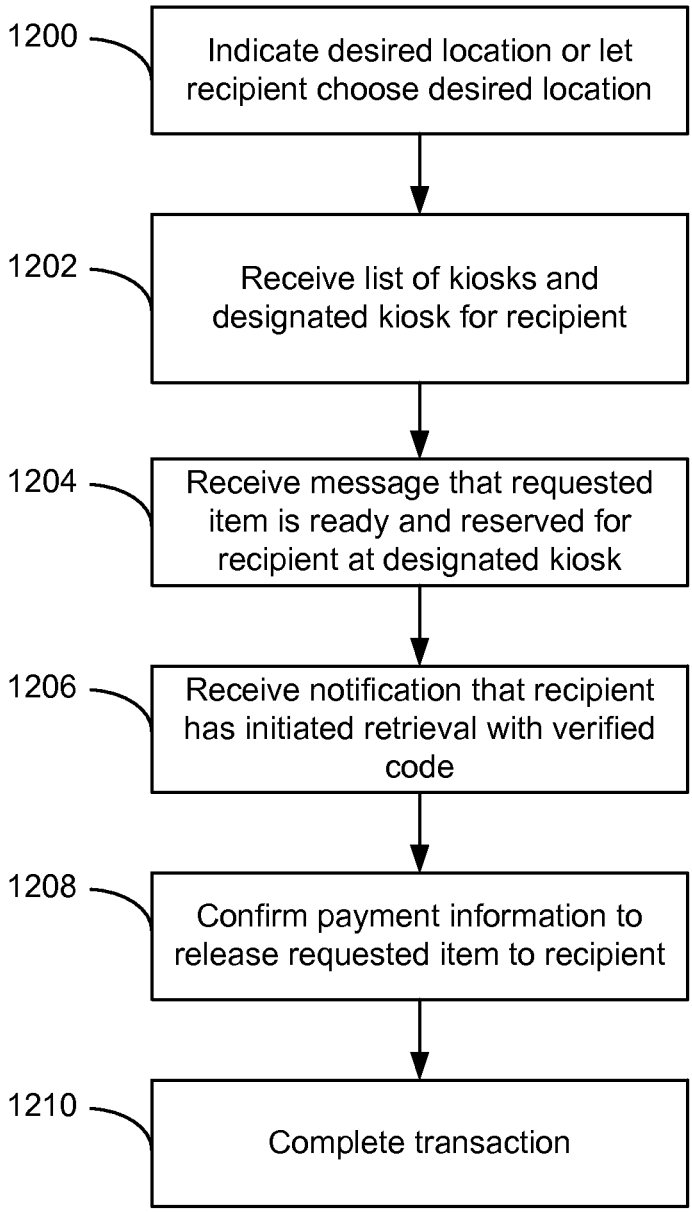
1200
Indicate desired location or let recipient choose desired location
1202
Receive list of kiosks and designated kiosk for recipient
1204
Receive message that requested item is ready and reserved for recipient at designated kiosk
1206
Receive notification that recipient has initiated retrieval with verified code
1208
Confirm payment information to release requested item to recipient
1210
Complete transaction

FIG. 12

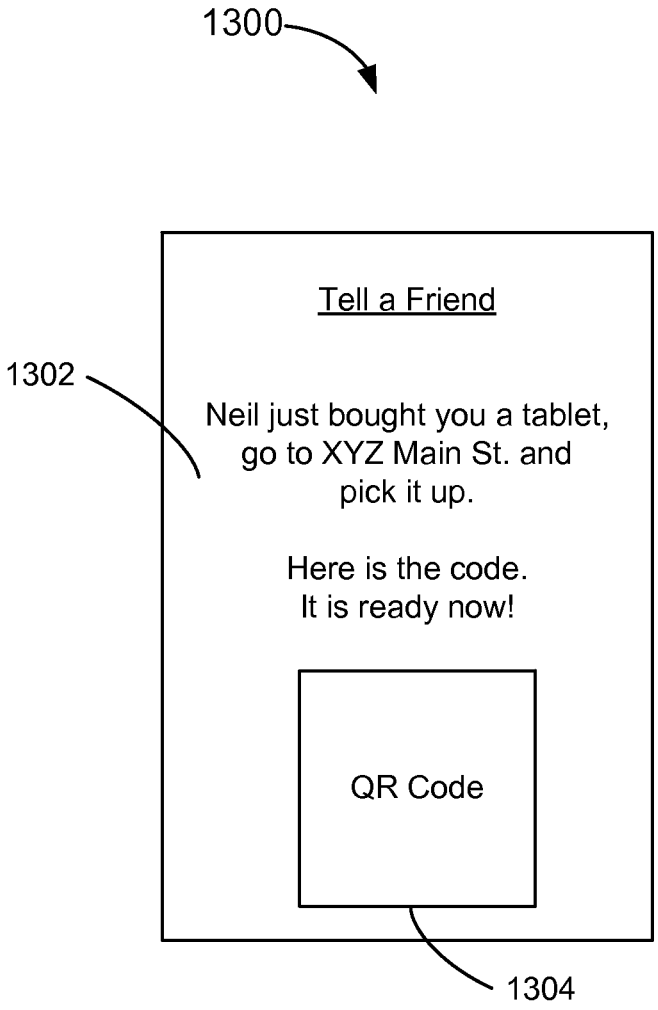
1300
Tell a Friend
1302
Neil just bought you a tablet, go to XYZ Main St. and pick it up.
Here is the code. It is ready now!
QR Code
1304

FIG. 13

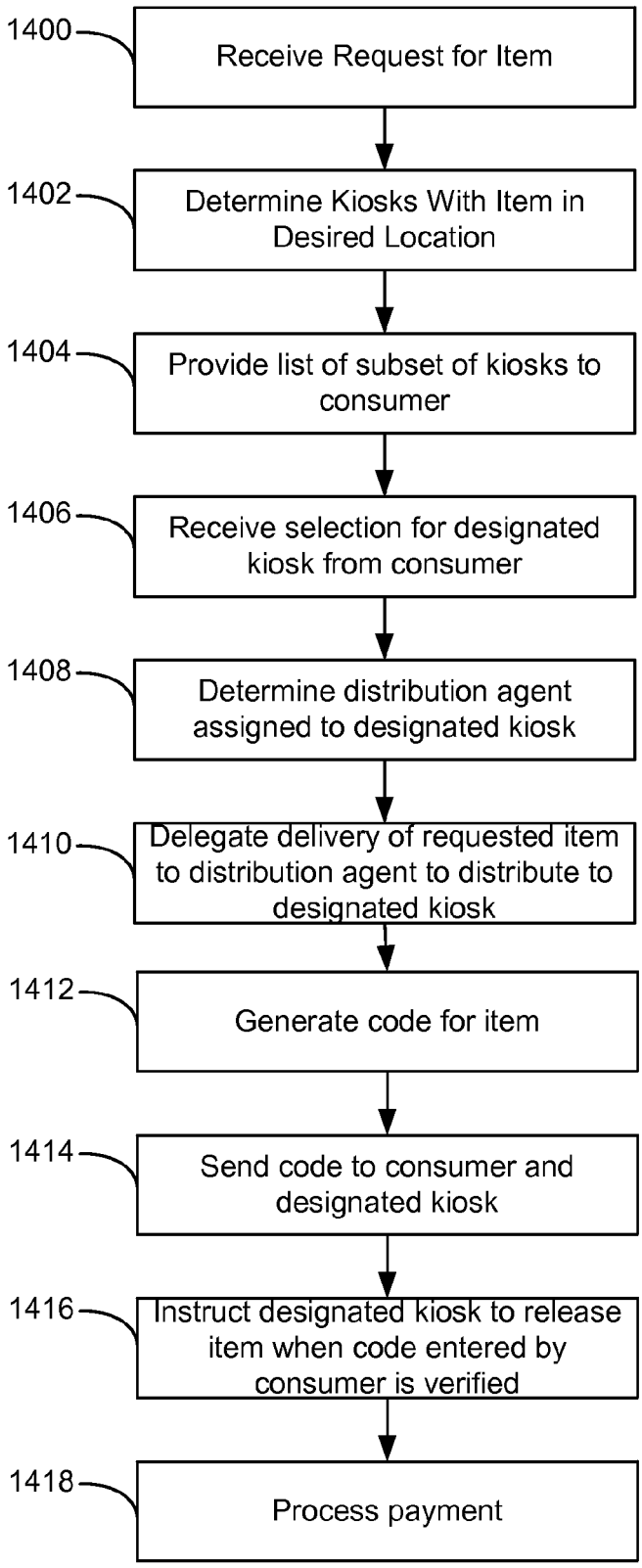
1400
Receive Request for Item
1402
Determine Kiosks With Item in Desired Location
1404
Provide list of subset of kiosks to consumer
1406
Receive selection for designated kiosk from consumer
1408
Determine distribution agent assigned to designated kiosk
1410
Delegate delivery of requested item to distribution agent to distribute to designated kiosk
1412
Generate code for item
1414
Send code to consumer and designated kiosk
1416
Instruct designated kiosk to release item when code entered by consumer is verified
1418
Process payment

FIG. 14

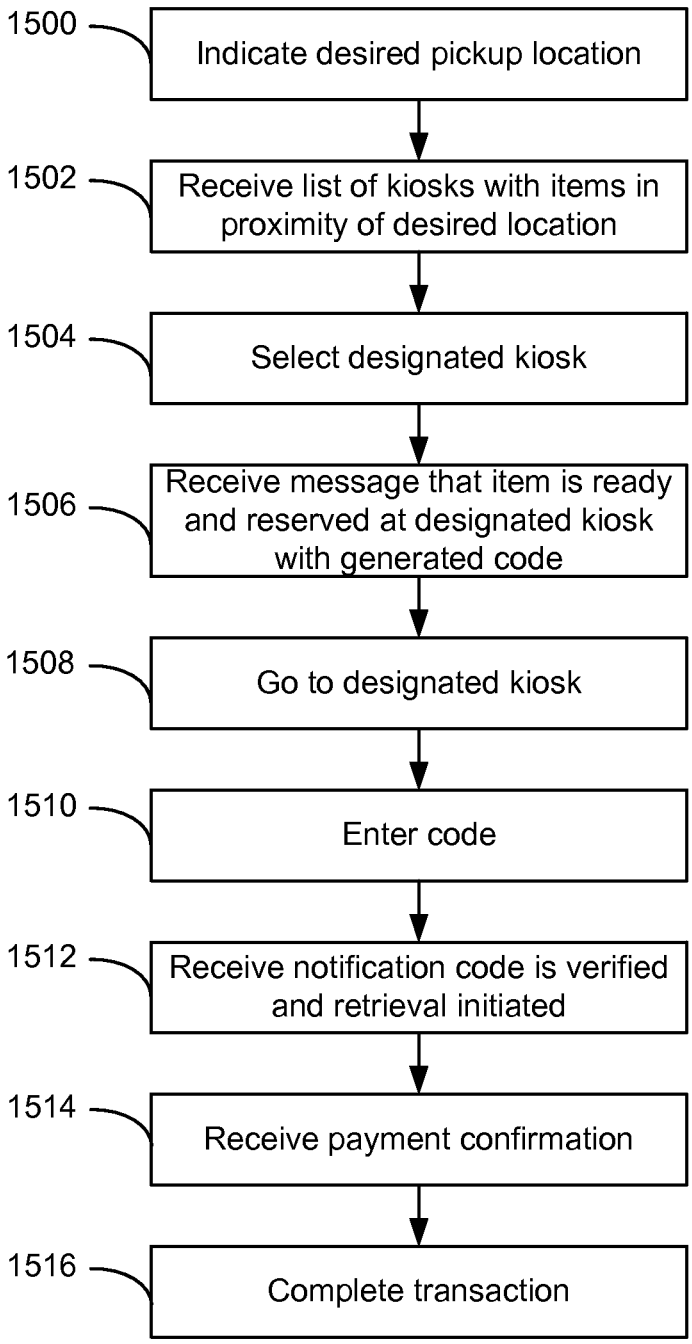
1500
Indicate desired pickup location
1502
Receive list of kiosks with items in proximity of desired location
1504
Select designated kiosk
1506
Receive message that item is ready and reserved at designated kiosk with generated code
1508
Go to designated kiosk
1510
Enter code
1512
Receive notification code is verified and retrieval initiated
1514
Receive payment confirmation
1516
Complete transaction

FIG. 15

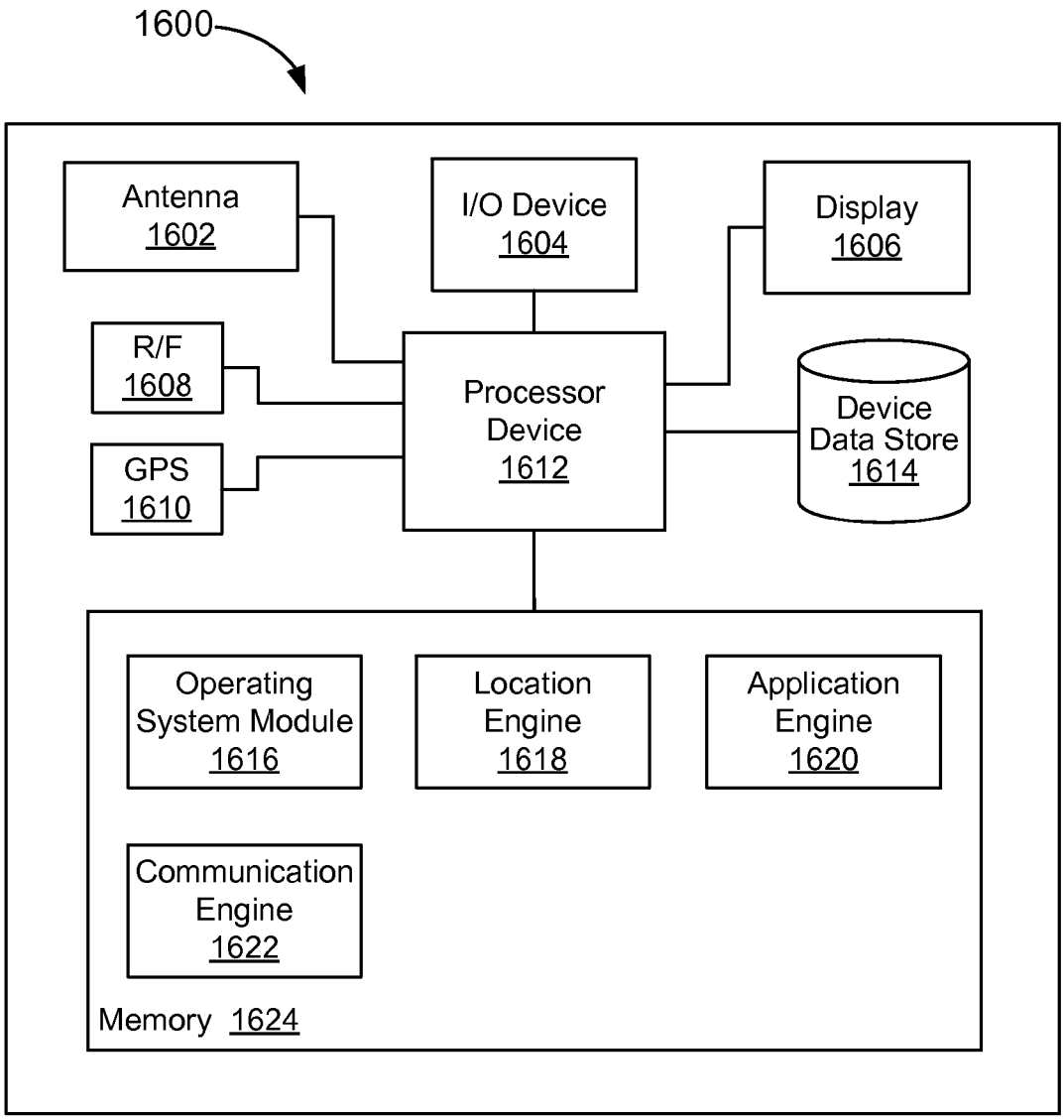
1600
Antenna
1602
I/O Device
1604
Display
1606
R/F
1608
Processor
Device
1612
Device
Data Store
1614
GPS
1610
Operating
System Module
1616
Location
Engine
1618
Application
Engine
1620
Communication
Engine
1622
Memory 1624

FIG. 16

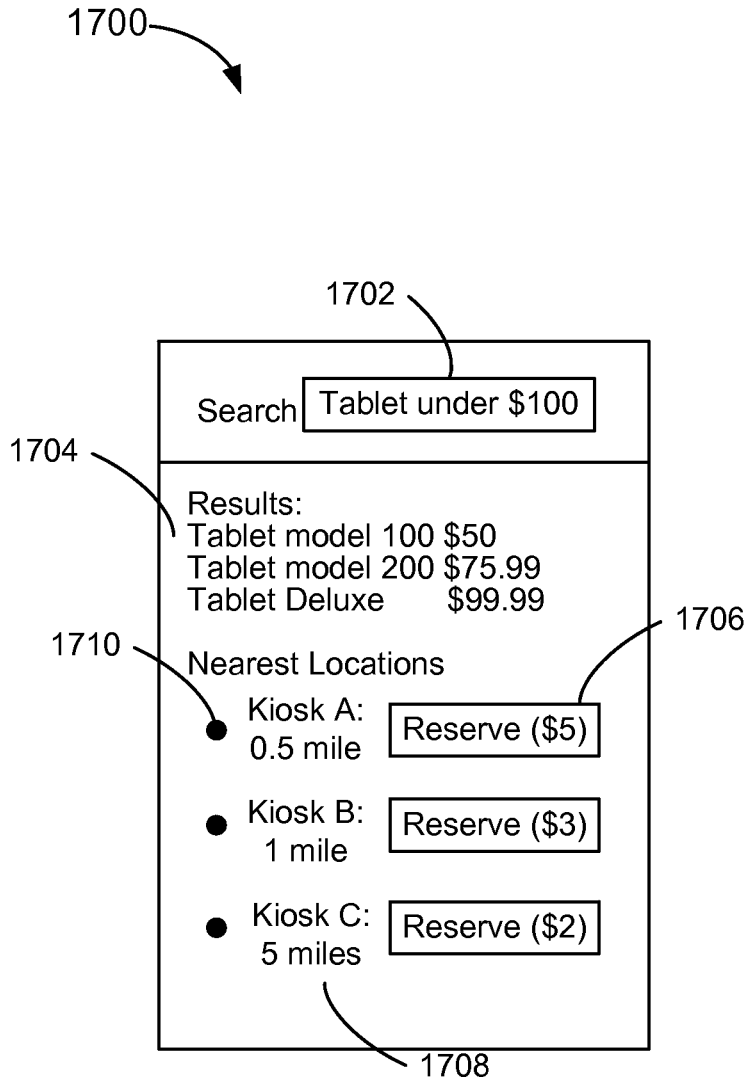
1700
1702
Search
Tablet under $100
1704
Results:
Tablet model 100 $50
Tablet model 200 $75.99
Tablet Deluxe $99.99
1710
1706
Nearest Locations
Kiosk A:
0.5 mile
Reserve ($5)
Kiosk B:
1 mile
Reserve ($3)
Kiosk C:
5 miles
Reserve ($2)
1708

FIG. 17

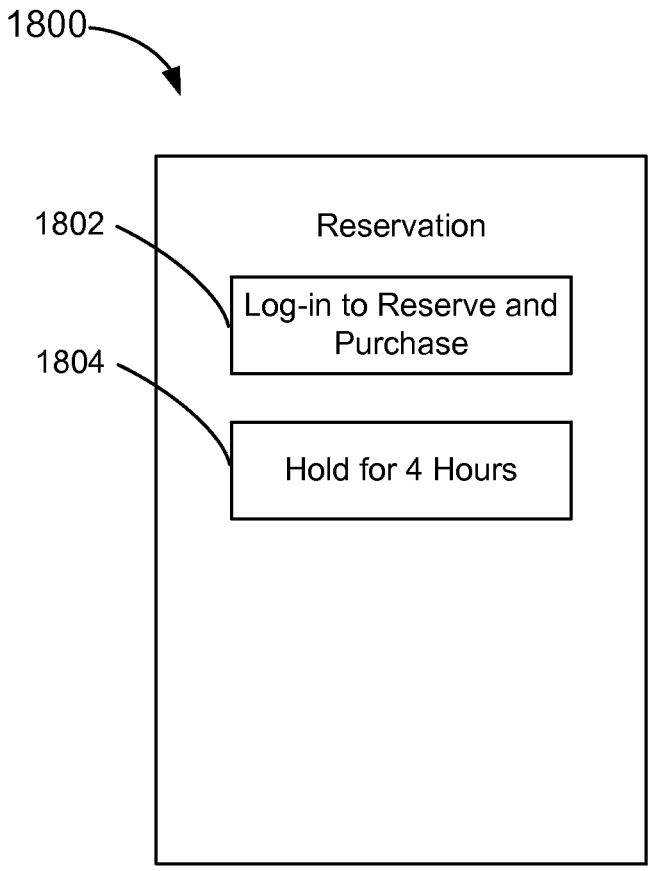
1800
1802
Reservation
Log-in to Reserve and Purchase
1804
Hold for 4 Hours

FIG. 18

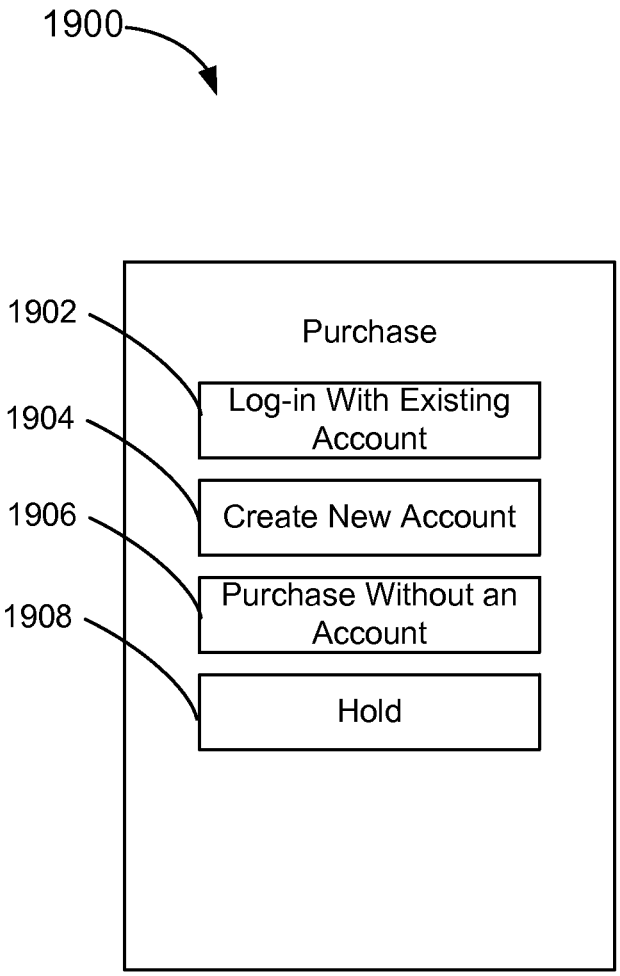
1900
1902
Purchase
Log-in With Existing Account
1904
Create New Account
1906
Purchase Without an Account
1908
Hold

FIG. 19

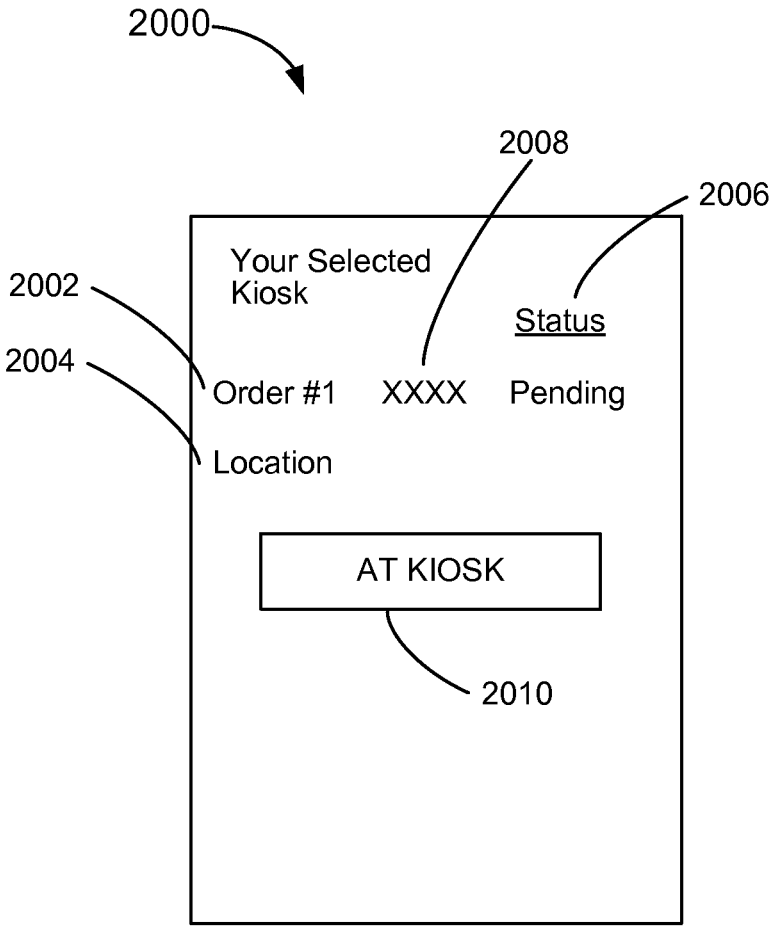
2000
2008
2006
Your Selected Kiosk
2002
Status
2004
Order #1
XXXX
Pending
Location
AT KIOSK
2010

FIG. 20

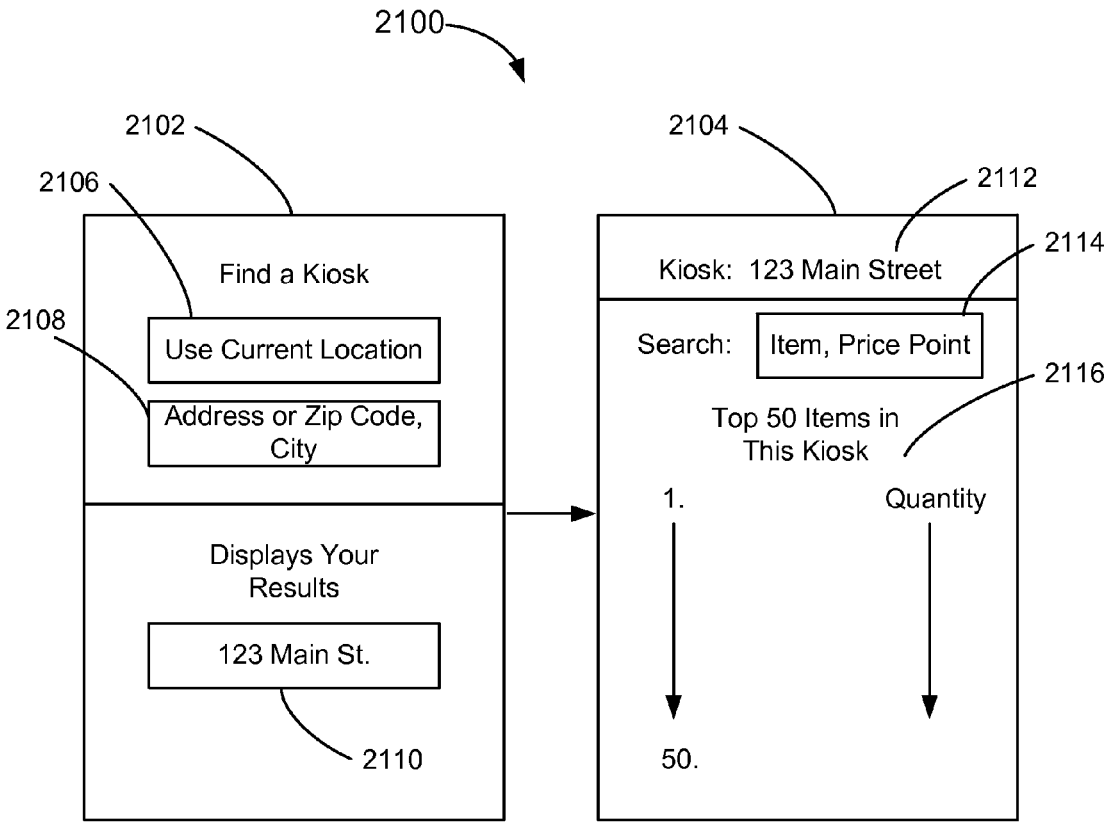
2100
2102
2104
2106
2112
Find a Kiosk
Kiosk: 123 Main Street
2114
2108
Use Current Location
Search:
Item, Price Point
Address or Zip Code, City
2116
Top 50 Items in This Kiosk
1.
Quantity
Displays Your Results
123 Main St.
2110
50.

FIG. 21

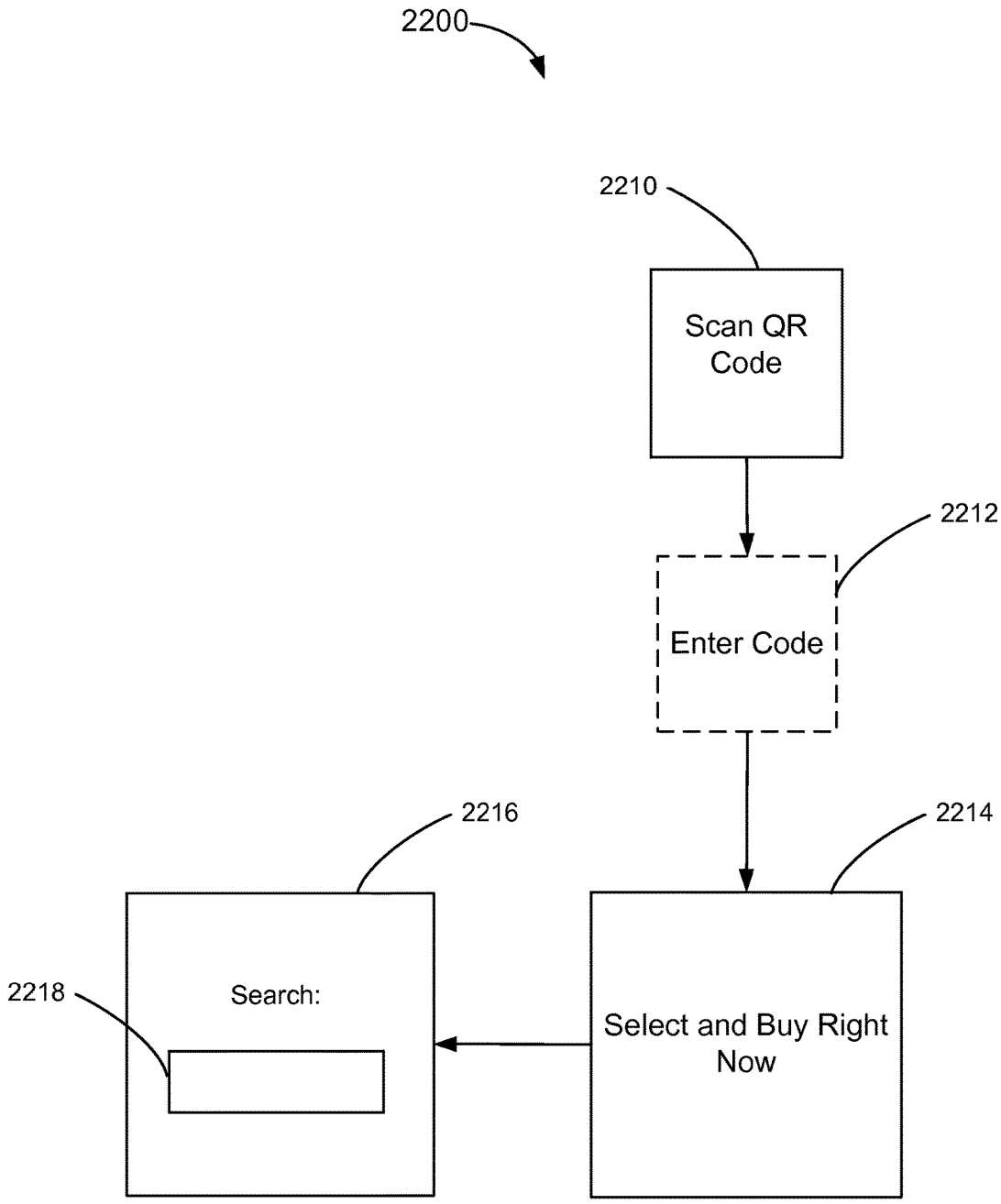
2200
2210
Scan QR Code
2212
Enter Code
2216
2214
2218
Search:
Select and Buy Right Now

FIG. 22

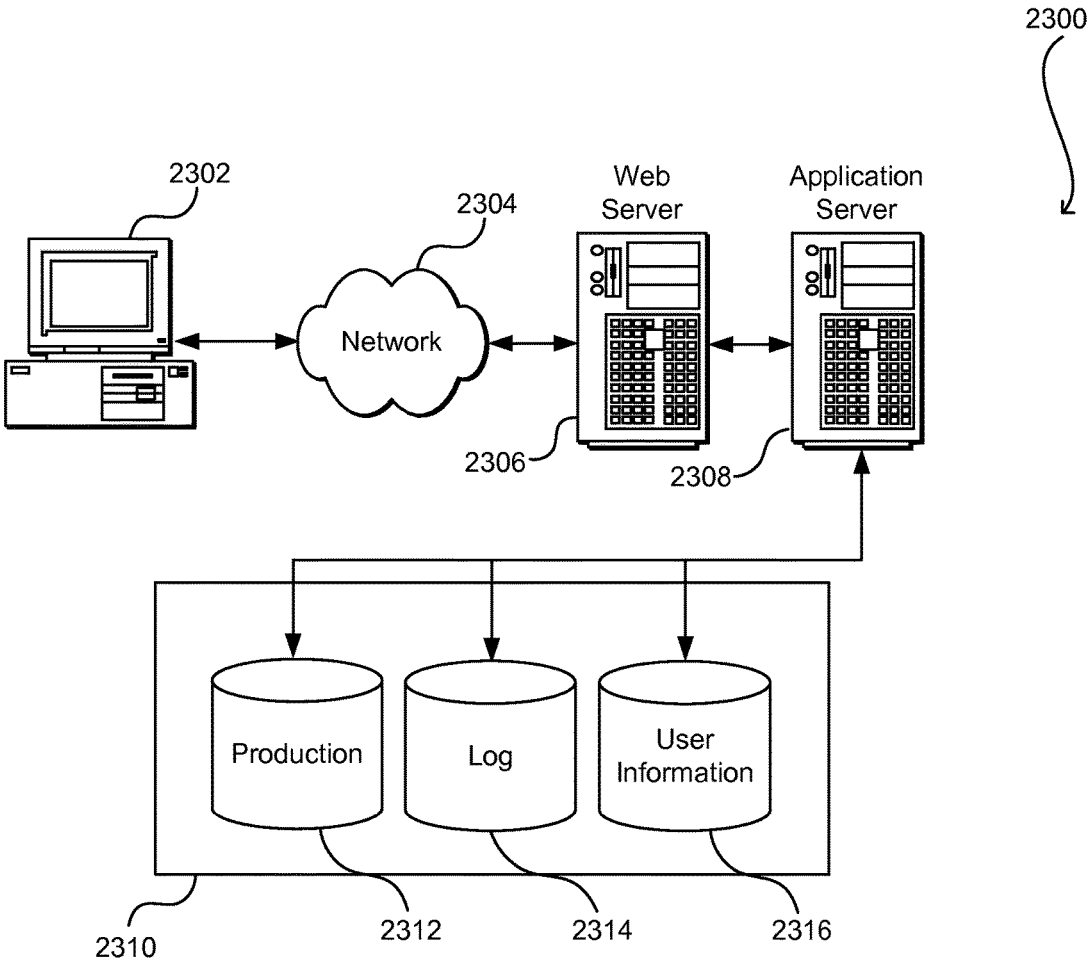
2300
2302
2304
Web Server
Application Server
Network
2306
2308
Production
Log
User Information
2310
2312
2314
2316

FIG. 23

KIOSK MANAGEMENT SYSTEM

BACKGROUND

With the growing accessibility and breadth of the Internet and telecommunications networks, many retail transactions may be conducted remotely, such as from a consumer's home, without necessitating the consumer to visit a brick-and-mortar retail location. Consumers may browse retail websites, order items, pay electronically, and receive the items delivered to their doorstep. Further, with the increasing usage of mobile devices, consumers frequently conduct transactions on their mobile devices while away from their homes, and can request delivery of items to locations other than a personal home address, for example, an office or a hotel. While convenient to the consumer, the delivery of numerous individual items to numerous individual consumers at varying addresses can become exponentially costly to both retail businesses and consumers.

BRIEF DESCRIPTION OF THE DRAWINGS

Various embodiments in accordance with the present disclosure will be described with reference to the drawings, in which:

FIG. **1** shows a block diagram illustrating an example distribution system in which items ordered electronically by consumers from a network retailer are delivered to kiosks for retrieval by the consumers;

FIG. **2** shows a flow diagram illustrating an example kiosk management method implemented in the distribution system of FIG. **1**;

FIG. **3** shows a block diagram illustrating an example kiosk management system of the distribution system of FIG. **1**;

FIG. **4** shows a flow diagram illustrating an example method implemented by the kiosk management system of FIG. **3** to determine initial items with which to pre-stock kiosks;

FIG. **5** shows a flow diagram illustrating an example method implemented by the kiosk management system of FIG. **3** to manage inventory among kiosks;

FIG. **6** shows a block diagram illustrating an example kiosk of the distribution system of FIG. **1**;

FIG. **7** shows a flow diagram illustrating an example process followed by a distribution agent of the distribution system shown in FIG. **1** to deliver and maintain kiosks;

FIG. **8** shows a flow diagram illustrating an example method implemented by the kiosk of FIG. **6** to process an order from a consumer for an item;

FIG. **9** shows an example external interface of a kiosk of the distribution system shown in FIG. **1**;

FIG. **10** shows a flow diagram illustrating an example method implemented by the kiosk management system of FIG. **3** to designate a recipient to receive an item as a gift and enable the recipient to retrieve the item from a kiosk;

FIG. **11** shows a flow diagram illustrating an example process followed by a consumer to gift an item to a recipient;

FIG. **12** shows flow diagrams illustrating an example process followed by a consumer to retrieve an item via a kiosk;

FIG. **13** shows an example user interface of a mobile application presented on a mobile device via which a recipient can initiate retrieval of a gift from a kiosk;

FIG. **14** shows a flow diagram illustrating an example method implemented by the kiosk management system of FIG. **3** to process a request for an item that is excluded from the pre-stocked items in the kiosks;

FIG. **15** shows a flow diagram illustrating an example process followed by a consumer to retrieve an item via a kiosk;

FIG. **16** shows an example mobile device via which a recipient can initiate retrieval of a gift from a kiosk;

FIG. **17** shows an example user interface of a mobile application presented on a mobile device via which a consumer can select a kiosk from which to reserve an item;

FIG. **18** shows an example user interface of a mobile application presented on a mobile device via which a consumer can opt to hold an item at a kiosk for a predetermined amount of time without purchasing the item;

FIG. **19** shows an example user interface of a mobile application presented on a mobile device via which a consumer can select purchase options;

FIG. **20** shows an example user interface of a mobile application presented on a mobile device via which a consumer can indicate that he or she is at a kiosk to retrieve the item;

FIG. **21** shows example user interfaces of a mobile application presented on a mobile device via which a consumer may search for kiosks;

FIG. **22** shows an example user interface presented on a kiosk via which a consumer may scan or enter a code to initiate retrieval of the item from the kiosk;

FIG. **23** shows an example computing environment for implementing aspects of the present disclosure in accordance with various embodiments.

DETAILED DESCRIPTION

In the following description, various embodiments will be described. For purposes of explanation, specific configurations and details are set forth in order to provide a thorough understanding of the embodiments. However, it will also be apparent to one skilled in the art that the embodiments may be practiced without the specific details. Furthermore, well-known features may be omitted or simplified in order not to obscure the embodiment being described.

An improved distribution system for providing items to consumers can use a network of kiosks to deliver an item to a consumer. The item can be delivered by an operator of a distribution system to a kiosk for the consumer to pick up. For example, a consumer can order one low priced (or otherwise eligible) item or a number of such items, which items may be delivered by an operator of a distribution system to a kiosk for the consumer to pick up. In addition, items regularly-purchased by consumers can be stocked in kiosks and can be purchased on demand according to availability in the kiosk system. The network of kiosks may, for example, include any number of kiosks strategically located for easy and convenient access to consumers. In one embodiment, the number of kiosks includes between 1,000 and 500,000 kiosks. More specifically, the number of kiosks can include 20,000 kiosks. Kiosks may be placed in locations that consumers will already frequent for other tasks, such as gas stations or grocery stores. Because shipping and delivery operations can be shared between the seller and the consumer, the shipping costs charged to the consumer for pick up at a designated kiosk may be significantly reduced (or free, if the shipping costs are negligible to the seller). In one embodiment, the network of kiosks provides an infrastructure that may be scaled to lower prices on millions of items. The shipping of the items to the kiosks of the system may be consolidated to individual distribution agents who

work in specific geographies to maintain and/or manage a subset of kiosks. A subset can include one or more kiosks.

In an example embodiment, a consumer may use his or her mobile device (e.g., a smartphone) to see what items are available in nearby kiosks for convenient pick up or retrieval. A kiosk management system may designate kiosks to receive pre-stocked items, for example, items that are often requested by consumers, best-selling items or trending items. The pre-stocked items may vary over different geographic locations. Accordingly, subsets of kiosks in different geographic locations may be stocked with different amounts of pre-stocked items and/or different pre-stocked items. The pre-stocked items and/or the inventory of items in a kiosk or a subset of kiosks can be customized based on previous transaction history and/or other analytical data relating to the demographic and buying patterns of consumers in the geographical locations of the subsets of kiosks.

After the selection of a particular item(s) for purchase during a checkout process, the consumer may choose a designated kiosk to pick up the item(s). The designated kiosk may be at a location to which the consumer plans to go anyway, such as a grocery store, a location that is en route to the consumer's final destination, or another location convenient to the consumer. For example, the consumer may be traveling for business and select a kiosk at an airport at which he/she will have a layover.

When the consumer has requested items and selected a kiosk, the kiosk management system may communicate with the designated kiosk to coordinate delivery. In some cases, the requested item may be an item that is pre-stocked at a subset of kiosks. The kiosk management system may communicate with the designated kiosk to reserve the item for the consumer so that the reserved items may not be retrieved or purchased by other consumers. In other cases, the requested item may not be included in the pre-stocked items that are typically pre-stocked. To reduce the added shipping cost to the consumer, the consumer may elect to pick the requested item up at a designated kiosk after it has been stocked with the requested item. The kiosk management system may coordinate delivery of the requested item to the designated kiosk. In some embodiments, the delivery of items to the network of kiosks may involve distribution agents to stock kiosks with items.

When a requested item is delivered and/or reserved at a designated kiosk, a consumer may receive a notification from the kiosk management system that the requested item is available at the designated kiosk. Retrieving the requested item may involve the consumer going to the designated kiosk to have the requested item released from the kiosk so that the consumer can pick up the requested item and take it home. To release the requested item, the consumer may be prompted by the designated kiosk to log in with his or her pre-registered account information associated with the kiosk management system. The kiosk includes various mechanical components to secure, lock, and store all items. Releasing the requested items may include dispensing the requested item to the consumer, for example, through a door or compartment. In another example, each requested item may be stored and locked in an individual compartment or module, such that releasing the requested item involves unlocking that individual compartment or module for the consumer.

In another embodiment, when the consumer is notified that the requested item is available, the notification may also include a generated code. The notification may be transmitted via the Internet or any other telecommunications network, in the form of an electronic mail, instant message, text message, SMS, social network post, or any other suitable communication or message. The generated code can be a generated by the kiosk management system and may be a randomly generated alphanumeric code of varying length. The generated code may be unique to the transaction, consumer, kiosk, and/or item. In other embodiments, the generated code may be associated with the kiosk, consumer, transaction, and/or item for identification purposes. To initiate retrieval of the requested item from the designated kiosk, the consumer may be prompted to enter the generated code. The kiosk may then communicate with the kiosk management system to verify the generated code, and release the requested item when the code is verified. In other embodiments, the kiosk management system may simultaneously send the generated code to the designated kiosk and within the consumer notification. Thus, the designated kiosk may verify the generated code locally when the consumer enters the code to release the requested item(s). A payment process to authorize payment of the transaction may begin when the consumer initiates retrieval of the requested items from the kiosk. Thus, consumers are not charged for items that they have not retrieved.

Alternatively, the consumer may designate a second consumer, such as a friend or family member, to pick up the particular item(s), and/or the consumer may select items as a gift for a recipient to pick up. In some embodiments, the consumer may designate a designated kiosk for the recipient. The recipient may receive an e-mail, text, or other message from the kiosk management system that a gift is waiting for them at the designated kiosk. The message may further contain a generated code. For the recipient to initiate retrieval of the requested item(s), the recipient may be prompted by the designated kiosk to log in with the generated code that the recipient received in the message. The designated kiosk may communicate with the kiosk management system to verify the generated code and when verified, release the gift to the recipient. Alternatively, the kiosk may receive a communication with the kiosk management system to reserve the requested item with the generated code. Thus, when the recipient logs in with the generated code, the kiosk may verify the generated code locally to release the requested item to the recipient.

It should be recognized that some retailers provide items (e.g., goods and/or services) for consumers may offer shipping and delivery of the items when ordered remotely by consumers via an electronic marketplace or network site. Operators or owners of such electronic marketplaces or sites may also provide distribution services (e.g., inventory management, packaging, shipping, etc.) for individual sellers who would prefer not to provide such distribution services themselves. Without the distribution system, in some cases, low priced items may be too expensive to ship directly to the home of a consumer. An improved distribution system for providing items to consumers, such as described herein, can use a network of kiosks to reduce costs of distribution, including consumer, retailer and seller costs. Herein, retailers and sellers may be referred to interchangeably.

FIG. **1** shows an example block diagram of an example distribution system **100** according to at least one embodiment in which items ordered electronically by consumers **112** from a retailer **116** are delivered to kiosks for retrieval by the consumers. The distribution system **100** can include a kiosk management system **102** and an inventory management system that can be operated by a retail entity providing a plurality of items. In other embodiments, a retailer **116** or other seller may be a separate entity from the entity that operates the kiosk management system **102**. The retailer **116**

may operate its own retail website **106** and/or provide its own mobile application **114** for purchasing items. The retailer **116** can be in direct communication with an inventory entity **104**, such as a warehouse, fulfillment center or distribution center, where the items offered by the retailer **116** via the retail website **106** and/or mobile application **114** are physically stored.

The kiosk management system **102** may also include an inventory management system and can be in communication with the inventory entity **104**. The kiosk management system **102** may be associated with a retail website **106** manage delivery of items that are stored by the inventory entity **104** to kiosks **110** of the distribution system **100**. The kiosk management system **102** may be operatively coupled, e.g., via a communications network, to a network of kiosks **110**, which are placed in strategically designated geographic locations. The network of kiosks **110** may be maintained and stocked with items by a plurality of distribution agents **108**. The kiosk management system **102** may communicate with the kiosks **110** via a communications network to determine a current inventory of items in the kiosks **110**. In addition, the kiosk management system **102** and/or kiosks **110** may communicate with the distribution agents **108** and the inventory entity **104** to initiate a consolidated shipment of items to particular distribution agents **108**. The distribution agents **108** may then deliver the items to individual kiosks **110** to which the distribution agents **108** are assigned to manage and maintain.

Distribution agents **108** may be assigned to a subset of kiosks **110** based on geographical location, such that the inventory entity **104** may consolidate shipping of pre-stocked items to the distribution agents **108**. The distribution agents **108** may then make deliveries of various items to specific kiosks **110**. The inventory and available items provided to each kiosk may not be identical between kiosks. However, because the assignment of distribution agents **108** to kiosks **110** can be based on geographical location, the delivery of items to different kiosks **110** may be efficient and cost-effective for the kiosk management system **102**.

A distribution agent **108** may be an automated machine or robot operated by the kiosk management system **102**, an individual person authorized by the kiosk management system **102** or an authorized entity (e.g., merchant, business, etc.). The distribution agent **108** can be responsible for maintaining and delivering to one or more kiosks **110**. The kiosk management system **102** may instruct delivery of consolidated shipments of items to the distribution agent **108** from an inventory entity **104** on a regular basis, for example, daily. Upon receipt, the distribution agent **108** may go to each kiosk **110** to which the distribution agent **108** is assigned and deliver the items to kiosk **110** accordingly, including placing the items in item storage within the kiosk **110** (see e.g. Product Storage **608** in FIG. **6**). Once an item is delivered to a designated kiosk **110**, the kiosk management system **102** may send a notification (e.g., email, text message, etc.) to the consumer **112** to inform the consumer **112** that the requested item is ready for pick up. In some embodiments, the consumer **112** is not charged for the requested item until the requested item is retrieved by the consumer **112** at the designated kiosk **110**. When the consumer **112** is at the designated kiosk **110**, he or she may browse the kiosk **110** for pre-stocked items that are available (i.e., in stock and not reserved for another consumer **112**) and purchase additional pre-stocked items together with the requested item. A payment process may be initiated to authorize payment of the requested item and additional pre-stocked items purchased in a transaction at the designated kiosk **110**. The payment process may be initiated by the designated kiosk **110** to the kiosk management system **102**, retailer **116**, or other entity.

The kiosk **110** may update its inventory in real time to enable the kiosk management system **102** to have a current status of each of the plurality of kiosks **110**. By analyzing data received from the kiosks **110**, the kiosk management system **102** may can determine which pre-stocked items to place in the kiosks and track inventory turns. A distribution agent **108** can remove unclaimed items from the kiosk **110** not picked up within a designated timeframe. The removal of unclaimed items can enable kiosk management system **102** place items in the kiosk **110** as dictated by the kiosk management system **102**. The kiosk management system **102** can also credit a consumer account for removed unclaimed items.

Distribution agents **108** may operate 365 days a year and can manage anywhere from 1 to a million kiosks **110** or more, depending upon the kiosks' sizes and capacities. For example, in very small towns, only one kiosk **110** may be sufficient to service the town, but in larger cities hundreds of kiosks **110** may be needed.

Consumers **112** may browse items and make requests for items via the retail website **106** using a desktop, laptop, mobile device, etc. or via a mobile application **114** using a mobile device, such as a smartphone, tablet, electronic book reader or other mobile device capable of connecting to the Internet. The consumers **112** may access the retail website **106** through a communications network, such as the Internet. The communication network may be any wired network, wireless network, or combination thereof. In addition, the network may be a personal area network, local area network, wide area network, cable network, satellite network, cellular telephone network, or combination thereof. For example, the communication network may be a publicly accessible network of linked networks, possibly operated by various distinct parties, such as the Internet. In some embodiments, the communication network may be a private or semi-private network, such as a corporate or university intranet. The communication network may include one or more wireless networks, such as a Global System for Mobile Communications (GSM) network, a Code Division Multiple Access (CDMA) network, a Long Term Evolution (LTE) network, or some other type of wireless network. Protocols and components for communicating via the Internet or any of the other aforementioned types of communication networks are well known to those skilled in the art of computer communications and thus, need not be described in more detail herein. The computing device of the consumer may connect to any such communications network via a wireless (e.g., Wi-Fi) or wired network connection. When a consumer **112** is using the mobile application **114** on a mobile device, the mobile device may be connected through a telecommunication network provided by a service provider, or a wireless (e.g., Wi-Fi) network.

In some embodiments, the retailer **116** may include the kiosk management system **102**. The consumer **112** may be in communication directly with the kiosk management system **102** when the kiosk management system **102** is also the retailer offering the items. In such cases, the consumer **112** may pre-register account information and payment information with the kiosk management system **102**. Account information can include a username, password, login information, delivery address, mobile device number or other identification number (e.g., IP address). Payment information can include a credit card identifier, bank account identifier, rewards account identifier, billing address, or any other

suitable information needed by an issuer and a consumer **112** to authorize a payment transaction and perform clearing and settlement of funds such that the consumer **112** can pay for the requested items.

The network of kiosks **110** may be strategically located at, or in proximity to, other businesses with which the kiosk management system **102** may have a partnership. Thus, when a consumer **112** goes to a kiosk **110** that may be located at a gas station, a promotion may be offered to the consumer, such as $0.03 off per gallon during the consumer's visit when the consumer **112** retrieves the requested item at the kiosk. In another example, a kiosk may be located at a coffee shop, so a consumer **112** may be incentivized to select that kiosk if he/she wants to receive a promotion for coffee or other items sold at that coffee shop, and/or if the consumer **112** was planning on going to the coffee shop to get coffee and can pick up his or her requested item on the same trip.

Techniques described and suggested herein include methods and systems for distributing items to a multitude of consumers using a network of kiosks **110** managed by a kiosk management system **102**. FIG. **2** shows a flow diagram illustrating an example kiosk management method **200** implemented in the distribution system of FIG. **1**. Some or all of the process shown in FIG. **2** (or any other processes described herein, or variations and/or combinations thereof) may be performed under control of one or more computer systems configured with executable instructions and may be implemented as code (e.g., executable instructions, one or more computer programs or one or more applications) executing collectively on one or more processor devices, by hardware or combinations thereof. The code may be stored on a computer-readable storage medium, for example, in the form of a computer program including a plurality of instructions executable by one or more processor devices. The computer-readable storage medium may be non-transitory.

In one embodiment, the kiosk management system **102** of FIG. **1** may cause a network of kiosks **110** to be provided with pre-stocked items at **200**. The selection of pre-stocked items provided at specific kiosks may be determined by the kiosk management system **102** based on transaction history of the specific kiosks, or in other embodiments, by an external retailer in communication with the kiosk management system **102** to provide the items to the specific kiosks. Thus, individual kiosks in different locations may have quantities of items, as well as items that vary from other kiosks.

At **202**, the kiosk management system **102** may receive a request directly or indirectly from a consumer for one or more items. For example, the consumer may generate a request through a retail website **106** or mobile application **114** operated by an external retailer **116**. The external retailer can then provide the request to the kiosk management system **102**. In some embodiments, the consumer may browse available pre-stocked items and from the pre-stocked items in stock, request one or more items. The kiosk management system **102** can determine which items are pre-stocked at which kiosks **110**. The pre-stocked items in local kiosks **110** can be requested and/or reserved by consumers **112** through use of a retail website **106** and/or mobile application **114** operated by the retailer **116**. Alternatively, a consumer **112** may go directly to a kiosk and browse the pre-stocked items available for purchase at that kiosk, such as pre-stocked items that are not reserved for other consumers.

In one embodiment, the consumer may request items that are not included in the pre-stocked items be made available as pre-stocked items. The consumer can make this request from the website operated by the kiosk management system **102**, retail website **106** or mobile application **114** operated by the external retailer **116**. The requested items that are not pre-stocked may be distributed to a designated kiosk chosen by the consumer. Thus, the requested item may be included in the selection of pre-determined pre-stocked items. Alternatively, the consumer may request one or more items that are excluded from the stock of items available in the kiosks.

In one embodiment, the kiosk management system **102** can use a location of the consumer at **204** to aid in distribution of an item to the consumer. The location of the consumer may be determined by an IP address of the consumer's computer, or a GPS location from the consumer's mobile device. The location of the consumer may also be determined based on other account information, such as a work/office address. The consumer may also provide her current location or address in the request. In an alternative embodiment, the consumer may provide a designated location, such as a future destination, to which she will be traveling so the requested item(s) can be picked up upon her arrival at the destination. For example, if the consumer knows she will be in New York for a business trip tomorrow, she can designate the requested item for pickup at a kiosk **110** located in New York that is convenient for her. In another example, the consumer may designate a location that is en route to his or her commute to or from work.

At **206**, the kiosk management system **102** may determine a subset of kiosks **110** within a designated area near the location of the consumer. Then, the kiosk management system **102** may communicate with the subset of kiosks **110** to determine whether at least one of the kiosks **110** within the designated area has the requested item(s) in stock. The designated area may be set by the consumer, or have a default value determined by the kiosk management system **102**. For example, the kiosk management **102** system may search for kiosks within 5 miles of the location of the consumer, and determine which one, if any, of the kiosks within 5 miles of the location of the consumer have the requested item(s) currently in stock for the consumer.

When it is determined that there is at least one kiosk **110** in the subset of kiosks having the requested item(s) in stock and is within the predetermined proximity of the location of the consumer, the kiosk management system **102** may transmit a list identifying such kiosks to provide to the consumer, such as through the retail website **106**, as shown at **208**. The kiosk management system **102** may also identify kiosks **110** that are outside of the predetermined proximity of the location to offer more kiosk selection options to be provided to the consumer, particularly if not many kiosks are found to have the requested item(s) in stock.

The consumer may then select a kiosk **110** and have the selection provided to the kiosk management system **102**. Thus, at **210**, the kiosk management system **102** may receive a communication from the consumer with the selection for the kiosk **110** at which the consumer would like to initiate retrieval of the requested items. Alternatively in another embodiment, the kiosk management system **102** may communicate with the consumer through the retail website **106** or mobile application **114** operated by the external retailer **116**. Thus the kiosk management system **102** may receive the communication with the selection for the kiosk **110** made by the consumer and transmitted from the retail website **106** or mobile application **114**.

Once the kiosk management system **102** receives the selection, the kiosk management system may communicate with the designated kiosk **110** with a reservation communi-

cation to reserve the requested item at **212**. The designated kiosk **110** may reserve the requested item for a limited amount of time, for example, 3 days. When the requested item is reserved, it is reserved for the requesting consumer or a recipient designated by the requesting consumer such that another consumer cannot retrieve the requested reserved item. For example, another consumer browsing for pre-stocked items in local kiosks or another consumer at the designated kiosk cannot select the reserved item for purchase. In one embodiment, the consumer may provide an estimated time when the requested item will be picked up, and when that time has elapsed, the reservation for the requested item may be cancelled or may otherwise expire. In some embodiments, only when the requested item is successfully retrieved by the consumer is a payment process initiated and the consumer is charged. In one embodiment, the reservation communication from the kiosk management system **102** to the designated kiosk **110** may include a code generated by the kiosk management system **102**. The generated code may also be sent to the consumer in a notification message alerting the consumer that the requested item is available at the designated kiosk **110** for retrieval, as shown at **214**. The notification may be transmitted via a communications network such as those described above, in the form of an electronic mail, instant message, text message, SMS, or any other suitable communication or message.

The generated code may be unique to the transaction, consumer, kiosk, and/or item. In one embodiment, the generated code is a randomly generated alphanumeric code of varying length. In other embodiments, the generated code is an optical code, such as a one-dimensional bar code, or a two-dimensional bar code such as a Quick Response Code (QR code). In other embodiments, the generated code may be associated with the kiosk, consumer, transaction, and/or item for identification purposes.

To initiate retrieval of the requested item from the designated kiosk **110**, the consumer may be prompted to enter the generated code at the kiosk **110**. The kiosk **110** may then communicate with the kiosk management system **102**, as shown at **216**, to verify the generated code, and release the requested item when the code is verified to begin payment processing for the item using the consumer's account information and payment information. In some embodiments where the kiosk management system **102** sends a communication to the designated kiosk **110** with the generated code, the designated kiosk may verify the generated code locally when the consumer enters the code to the kiosk to release the requested item(s).

At **216**, the transaction is complete when the kiosk management system **102** processes payment using the consumer's account information and payment information and instructs the designated kiosk **110** to release the requested item. In one embodiment, the consumer pre-registers his or her account information and payment information with the kiosk management system **102**. In another embodiment, the consumer may pre-register account information and/or payment information with the retail website or retailer; accordingly, the kiosk management system may communicate with the retail website to initiate payment. Account information can include a username, password, login information, delivery address, mobile device number or other identification number (e.g., IP address). Payment information can include a credit card identifier, bank account identifier, rewards account identifier, billing address, or any other suitable information needed by an issuer and a consumer to authorize a payment transaction and perform clearing and settlement of funds such that the consumer can pay for the requested items.

Any or all of the operations and functions described above in the example method of FIG. **2**, in any order, may be performed by an example kiosk management system **102**. The kiosk management system **102** may include a server computer **300** or a group of servers processor devices configured to execute computer readable instructions stored in non-transitory computer readable media.

FIG. **3** shows a block diagram illustrating an example kiosk management system of the distribution system of FIG. **1**. As illustrated in FIG. **3**, the example kiosk management server **300** may include a processor device **302** and a memory **320**. The processor device **302** can be communicatively coupled to and have access to several remote and/or local data stores configured to store data, for example, an account information data store **304**, transaction history data store **306**, and/or a payment information data store **322**. The account information data store **304** may store account information associated with a plurality of consumers. In some embodiments, the account information is pre-registered for each consumer. In other embodiments, temporary account information may be generated and temporarily stored for consumers making a one-time transaction as a "guest consumer," as opposed to a "registered consumer." Thus, the temporary account information may be unique to the one-time transaction. Account information can include a username, password, login information, delivery address, mobile device number or other identification number (e.g., IP address). Additionally, account information of the consumer can include gender, age, annual income, annual average spending, preferred items, or other relevant demographic or analytical data.

The transaction history data store **306** may store information relating to previously conducted transactions, including for example, items in the transactions, the quantity of items, the payment type used for the transactions, where and when the transactions were conducted, the kiosks used for the transactions, etc. For example, the transaction history may show that in San Francisco on rainy days, more umbrellas are requested from the kiosks **110** in popular areas of San Francisco. The transaction history may also be correlated with some of the account information. For example, the transaction history may show an increased number of earphones requested by consumers aged 18-25 and retrieved from kiosks **100** located near universities. The transaction history stored in transaction history data store **306** may be for a plurality of transactions involving different items, consumers, locations and kiosks **110**.

The payment history data store **322** may store payment information associated with a plurality of consumers. Payment information can include a credit card identifier, bank account identifier, rewards account identifier, billing address, or any other suitable information needed by an issuer and a consumer to authorize a payment transaction and perform clearing and settlement of funds such that the consumer can pay for the requested items. Additionally, payment information of the consumer can include a gift certificate identifier, coupon code, or other information relevant to payment processing of the transaction.

The memory **320** may include several software modules of code executable by the processor device **302** to perform functions of the kiosk management server **300**. In an example, the memory **320** may include a selected item engine **308** to determine an initial subset of items with which to pre-stock one or more kiosks **110**. The initial subset of

items selected for pre-stock in one or more kiosks **110** may be determined from a plurality of total items offered by a retail website **106** and/or kiosk management system **102**. In some embodiments, the pre-stocked items may be determined by a transaction analysis engine **316** that analyzes data stored in the account information data store **304** and/or transaction history data store **306**. There may also be a kiosk locator engine **310**, which may determine and locate a subset of kiosks within a predetermined proximity of a location of the consumer or a location designated by the consumer. Additionally, a kiosk inventory engine **312** may monitor and report inventory of items offered in kiosks **110** placed in various locations. The memory **320** may further include a distribution agent management module **314**, to manage the plurality of distribution agents and to which kiosks each distribution agent is responsible for monitoring, maintaining, and delivering items. Further, a code generation engine **318** may generate the code provided to the consumer and/or designated kiosk **110** for retrieval of the requested item.

Those skilled in the art will appreciate that the kiosk management system **102** can be any computing system that is configured to communicate via a communications network. For example, the kiosk management system **102** may include any number of kiosk management servers **300**, and/or other server computing devices, desktop computing devices, mainframe computers, and the like. In some embodiments, the kiosk management system **102** can include several devices physically or logically grouped together. The kiosk management system **102** can include various modules and components combined on a single device, multiple instances of a single module or component, etc. In some embodiments, the features and services provided by the kiosk management system **102** may be implemented as web services consumable via a communications network. In further embodiments, the kiosk management system **102** is provided by one more virtual machines implemented in a hosted computing environment. The hosted computing environment may include one or more rapidly provisioned and released computing resources, which computing resources may include computing, networking and/or storage devices. A hosted computing environment may also be referred to as a cloud computing environment.

As shown in FIG. **3** and noted above, the kiosk management server **300** may, in memory **302**, include a select item engine **318** to determine which kiosks will be pre-stocked, the initial items with those kiosks will be pre-stocked, and the quantity of the initial items. FIG. **4** shows a flow diagram illustrating an example method implemented by the kiosk management system of FIG. **1** to determine initial items with which to pre-stock kiosks. As illustrated, select item engine **318** may gather transaction history for a plurality of items at **400**. The transaction history can include information relating to previously conducted transactions, including, for example, items in the transactions, the quantity of items, the payment type used for the transactions, where and when the transactions were conducted, the kiosks **110** involved in the transactions, etc. For example, the select item engine **318** may initially gather transaction history data and determine that on a particular day, many more umbrellas were requested and sold from kiosks **110** in a particular geographic area.

At **402**, the select item engine **318** may analyze the transaction history and correlate the transaction history with specific kiosks **110**. Thus, the select item engine **318** may determine which kiosks **110** were offering umbrellas and determine which kiosks **110** located in San Francisco were particularly preferred in consumers' requests for umbrellas.

Further, it may be determined that kiosks **110** in San Francisco were preferred for consumers to pick up requested umbrellas because many consumers commute to San Francisco to work. Thus, when a consumer forgets to bring his or her umbrella, or it begins to rain on his or her way to work, the consumer can use his or her mobile device to order an umbrella and have it reserved for pick up at a kiosk located at a public transportation station in San Francisco. Accordingly, at **404**, the select item engine **318** may select which items, quantities of items, and the kiosks **110** in which to offer the items based on the transaction history and data analysis. Based on further analysis, for example, the item select engine **318** may select scarves and gloves to offer at San Francisco kiosks **110** for consumer commuters who find themselves unprepared for the day's weather. The select item engine **318** may also determine and learn which kiosk locations are preferred and most often frequented by consumers, for example, kiosks located at public transportation stations, coffee shops, or common lunch destinations.

At **406**, the kiosk management system **102** may communicate with the plurality of kiosks **110** to determine a current stock of currently offered items, for example, to determine if a kiosk **110** is running low on a commonly requested item, if a particular item has sold out, or if a particular item has not been sold for some time. In another embodiment, the kiosk management system may monitor inventory of the kiosks **110** and their items remotely without communicating with them. Different kiosks at different locations may offer a different selection of items and in different quantities. For example, kiosks located in airports may offer a wider selection of travel-sized hygienic products or electronic accessories, such as laptop and phone chargers, which may be items commonly forgotten by consumers when they are traveling. In comparison, kiosks located by universities may offer university-affiliated paraphernalia or office supplies, such as pens and notebooks, in addition to laptop and phone chargers.

Next, at **408**, when the select item engine **318** has determined which kiosks to stock with which pre-stocked items and whether certain kiosks are running low or have sold out of certain pre-stocked items, the kiosk management system **102** may communicate with a plurality of distribution agents **108**. In some embodiments, distribution agents can be people, automated robots, or businesses authorized by the kiosk management system **102**, to which the kiosk management system **102** can provide instructions to and initiate consolidated delivery of item shipments. For example, the kiosk management system **102** instructs a delivery agent to deliver of 100 earphones to a coffee shop at which a kiosk **100** that sells many earphones is located. The kiosk management system **102** also notifies an inventory entity, such as a warehouse, to include the 100 earphones in the next shipment to the delivery agent. In yet other embodiments, distribution agents **108** can be automated machines or robots capable of delivering items to kiosks **110**.

At **410**, the distribution agents **108** then can deliver the items they have received to the individual kiosks **110** to which they have been assigned by the kiosk management system **102**. For example, in a remote town, a distribution agent **108** may be an authorized person who is responsible for maintaining 5 kiosks **110** in the remote town. Thus, instead of the kiosk management system **110** instructing direct delivery of specific items to each of the 5 individual kiosks **110**, the items allocated for the 5 kiosks **110** in the town are consolidated and delivered to the authorized person

(i.e., the distribution agent **108**). The distribution agent **108** then makes individual deliveries of specific items to each the individual **5** kiosks **110**. Distribution agents may additionally transfer items between kiosks for inventory reasons, for example if one kiosk sells out of a pre-stocked item often requested by consumers, the distribution agent may transfer a number of the pre-stocked items from another kiosk having a higher inventory of the pre-stocked item.

Individual persons acting as distribution agents may be compensated, for example, salaried, hourly, on a per shipment basis or as a percentage of the transaction cost. Compensation to the distribution agents may also include discounts on items that may be dispensed by the kiosks the distribution agent is assigned to manage. The kiosks may be configured to dispense funds, vouchers, credits to the distribution agent as compensation.

At **412**, the kiosk management system **102** may receive reports from the kiosks **110** and/or the distribution agents **108** regarding the kiosk inventory, transactions, or status. For example, the distribution agent may notice a malfunction in one of the kiosks **110**, or may notice that a particular kiosk may be difficult to find. This information may be reported back to the kiosk management system **102** for evaluation and processing. Other information reported back may include notification of repairs and/or other suitable feedback that may be transmitted to the kiosk management system **102** automatically and/or directly by the kiosk **110**, or by the distribution agent **108**. The distribution agent can create the report though use of an administrative interface of the kiosk, if functioning, or through use of other network connected devices, such as an application on a smartphone.

To determine an initial selection and quantity of items with which to pre-stock some of the kiosks **110**, a kiosk management system **102** may implement an example method of iterative inventory management as illustrated in FIG. **5**. FIG. **5** shows a flow diagram illustrating an example method implemented by the kiosk management system of FIG. **1** to manage inventory among kiosks. In the example method, at **500**, the kiosk management system **102** may initially gather and analyze stored transaction history information associated with a plurality of items and a plurality of consumers.

Based on the transaction history of items purchased by the plurality of consumers, a subset of the plurality of items may be selected at **502**. For example, the subset of items may include best-selling items, highest rated items, and/or most frequently sold items. In some embodiments, the pre-stocked items may also be correlated with a geographical location of specific kiosks **110**, demographic information related to specific kiosks or their location, or other environmental information related to specific kiosks or their location. For example, it may be observed by the kiosk management system **102** and recorded in the transaction history that the number of umbrellas requested during rainy days is significantly increased over dry days, or sunscreen is requested in higher quantities in Miami, Fla. compared to Seattle, Wash. The kiosk management system can also use data from the retailer, such as geographic sales data, in the determination of pre-stocked items.

At **504**, once items have been selected for pre-stocking, the kiosk management system **102** may determine initial quantities of the pre-stocked items to have stocked in some of the kiosks **110**. Different kiosks can offer different items and in different quantities. For example, all kiosks **110** in the Los Angeles area may be pre-stocked with sunscreen; however, the kiosks **110** located in Long Beach and other beach areas may have higher quantities of sunscreen stocked than kiosks **110** in downtown Los Angeles.

To determine a quantity of items to stock within a subset of kiosks **110**, the kiosk management system **102** may determine the current inventory of items already stored in the subset of kiosks **110**, as shown at **506**. Thus, if some kiosks have a number of a particular item over a specific threshold, the kiosk management system **102** may not coordinate to have more of the particular item delivered to those kiosks. However, if it is determined that some kiosks have sold out of or are below a certain threshold of a particular item, then the kiosk management system **102** may initiate delivery of an additional quantity of the particular item to a distribution agent for stocking within those kiosks.

Subsequently, at **508**, the kiosk management system **102** may update what the pre-stocked items are and the quantities of the pre-stocked items based on at least transaction history and other data from individual kiosks, such as current inventory of the pre-stocked items. The selection of pre-stocked items may be updated, or the quantities of the pre-stocked items may be altered depending on sales and transfer of pre-stocked items between kiosks. In some cases, it may be determined that the quantity of certain items in particular kiosks has not sold as quickly as anticipated, and thus, the inventory of these certain items in particular kiosks is higher than expected. Accordingly, at **510**, the kiosk management system **102** may communicate with these particular kiosks and/or with the distribution agents **108** assigned to these particular kiosks to coordinate future delivery of certain items to these particular kiosks, to return certain items from these particular kiosks to management system **102** or inventory entity **104**, or to transfer certain items from these particular kiosks to other kiosks.

Next, at **512**, the kiosk management system **102** may conduct transactions with consumers for items consumers may requesting from the retailer **116** or kiosk **110**, e.g., the retail website **106**. For example, a consumer may request an item that is pre-stocked in at least one of the kiosks **110**, or the consumer may request an item that was excluded from the items with which the kiosks **110** were pre-stocked. In the latter case, the item may need to be delivered to at least one of the kiosks by a distribution agent **110**. After the completion of a transaction, the transaction history is updated at **514**, and an iterative feedback loop is created back to step **508** to update the selection and quantity of pre-stocked items offered at specific kiosks.

FIG. **6** shows a block diagram illustrating an example kiosk **600** of the distribution system of FIG. **1**. The example kiosk **600** may include a processor device **602** and a memory **614**. The processor device **602** can be communicatively coupled and have access to at least one data store storing data, for example, an item inventory information data store **604**. The item inventory information data store **604** may store item data associated with a plurality of items stored in the kiosk **600**, for example, identifiers for items, the quantity of items, and related substitute items.

The processor device **602** may be communicatively coupled to mechanical components, such as vending components **606**, to hold, retrieve, and release items stored in an item storage area **608** of the kiosk **600**. The kiosk **600** may also include a display or other external input/output interface **612**, such as a touch screen or LCD display with a keyboard for a consumer to view prompts and/or enter input, such as a generated code, login information, and/or account information. Further, there may be a security component **610** of the kiosk **600** to protect the items stored in the item storage **608**, such as an alarm and/or lock to prevent tampering with

the kiosk **600** and/or theft of the items. The security component **610** may also include a security camera and provide live streaming images or video to the kiosk management system **102** to ensure security of the items stored in the kiosk **600**. The processor device **602** may further be communicatively coupled to communication interface **622** for communicating with the kiosk management system **101** and other kiosks **110** via a communications network, as described above.

The memory **614** may include several software modules of code executable by the processor device **602** to perform functions of the kiosk management system **102**. In an example, the memory **614** may include a code verification module **616**. The code verification module **616** may be configured to determine that a generated code from the kiosk management system **102** verifies a received code entered by the consumer through the interface **612** before retrieving and releasing the item. The code verification module **616** may compare the entered code from the consumer with the generated code from the kiosk management system **102** for verification. The memory **614** may also include a transaction processing module **618** configured to initiate payment processing of a transaction with the kiosk management system **102** or retailer **116** when the code entered by the consumer is verified and retrieval of the requested item from the kiosk **600** is initiated. An item inventory management module **620** may be configured to communicate with the item inventory data store **604** to monitor and report the status of various items stored in the kiosk **600** and their current quantities. The item inventory management module **620** may generate warnings when the quantity of a specific item is below a certain threshold, and communicate the warnings to the kiosk management system **102**. To receive and transmit communications with the kiosk management system **102** via a communications network, a communication module **624** may also be present in the memory **614** of kiosk **600**.

In some embodiments, the kiosk **600** may be capable of storing up to 1,000 items of varying size and weight, and of varying prices, in the item storage area **608** of the kiosk. The kiosk **600** may communicate with the kiosk management system **102** and/or consumers via a communications network using the communication network interface **622**. In some embodiments, the kiosk **600** may establish a wireless connection, e.g., via Wi Fi or BLUETOOTH, a wireless technology for exchanging data over a short range, to a mobile device utilized by the consumer.

The item inventory management module **620** may communicate real time data regarding the status and item inventory of the kiosk **600** to the kiosk management system **102**. In other embodiments, the consumer may interact with the consumer interface **612** to enter a generated code, to enter login information and/or to initiate payment processing. The consumer interface **612** may also provide ordering and account access. Further, in some embodiments, the consumer interface **612** may include a payment interface (not shown) configured to accept cash and credit cards. Cash or credit card information received by the payment interface may be processed by a payment processing module **626** stored in memory **614**. In cash payment transactions, the payment processing module **616** may determine change which may be dispensed back to the consumer via the payment interface. In credit card or alternate electronic payments, the payment processing module **626** may, in conjunction with the communication network interface **622**, communicate with other entities to process payment, such as the kiosk management system, retailer, or other entity.

In the item storage area **608** of the kiosk **600**, a portion of the item storage may contain pre-stocked items determined by the kiosk management system as high turn around items. Another portion of the item storage **608** may be kept empty for requested items that are excluded from the items with which the kiosk **600** is pre-stocked, so that a portion of the item storage **608** remains available for deliveries of requested items to the designated kiosk. The ratio of area for pre-stocked items and area for additional items can be adjusted based on activity and transaction history of the kiosk **600**.

Further, additional benefits to the consumer include leveraged partnerships between the kiosk management system **102** and other preferred item providers (e.g., businesses, stores, gas stations, etc.) at which kiosks may be located and maintained. For example, promotions, such as coupons and discounts, may be provided for preferred item providers at which kiosks are located to incentivize consumers to select kiosks at the preferred item providers. Additionally, preferred item providers are incentivized to host and maintain kiosks for the kiosk management system **110** as it may increase consumer flow to the preferred item provider and potential transactions with the offered promotions.

In one example, a distribution agent **108** may be assigned to 100 kiosks **110** within a designated geographic area. The distribution agent **108** may be responsible for the delivery of items, such as daily vitamin packets, to the 100 kiosks **110**. It would be very costly for operator of the kiosk management system **102**, or a vitamin provider to provide individual vitamin packets to 100 kiosks **110** within a local area, or to deliver hundreds of vitamin packets to a plurality of individual consumers who may or may not be within the same local area. Thus, the kiosk management system **108** or vitamin provider may instruct delivery of a consolidated shipment of hundreds of vitamin packets to the distribution agent **108**. The distribution agent **108** may divide the shipment into the appropriate quantities for each of the 100 kiosks **110** to which the distribution agent **108** is assigned. For example, kiosks **110** located in heavily trafficked areas may be stocked with more vitamin packets (e.g., downtown in a business-heavy area) than kiosks **110** in more remote areas (e.g., residential suburbs).

FIG. **7** shows a flow diagram illustrating an example process followed by a distribution agent **108** of the distribution system shown in FIG. **1** to deliver and maintain kiosks. At **700**, a distribution agent **108** may receive an assignment from the kiosk management system **102** including a subset of kiosks **110** to monitor, manage, maintain, and deliver to. The subset of kiosks **110** may be within a radius of a predetermined location suitable to the distribution agent **108**. For example, a distribution agent **108** may receive an assignment of 100 kiosks **110** within 10 miles of his or her home.

At **702**, the kiosk management system **102** may cause an inventory entity **104** to send a consolidated shipment of items to the distribution agent **108**. The distribution agent **108** may receive delivery of the pre-stocked items and/or requested items from the kiosk management system **102**. The delivery of the pre-stocked items and/or requested items may also include a manifest that identifies which kiosks **110** to deliver which items to and the quantity of each item.

Subsequently at **704**, the distribution agent **108** may deliver the specific items and quantities to each of the kiosks **110** within his or her assignment. During the distribution agent's visit to each kiosk **110**, the distribution agent **108** may observe and record the status of the kiosk **110**, as shown at **706**. For example, the distribution agent **108** may check

that the kiosk **110** is operational and record the current inventory of items for confirmation at the kiosk management system **102**.

At **708**, the distribution agent **108** may report the operation and/or condition of the kiosk **110**, such as if repairs or maintenance (e.g., cleaning) is needed, to the kiosk management system **102** in a communication. For example, the distribution agent **108** may report to the kiosk management system **102** if there is graffiti on the kiosks that needs to be cleaned off. The report may be transmitted via communications network in the form of an electronic mail, instant message, text message, SMS, or any other suitable communication or message to the kiosk management system **102**.

Further, at **710**, if there are items in the kiosks **110** that are not selling well, and/or if requested items have not been retrieved by a consumer **112** within a time limit, the distribution agent **108** may remove these items to make room for other pre-stocked items or requested items. Additionally, the distribution agent **108** may transfer items from one kiosk to another, depending on inventory and storage needs instructed by the kiosk management system **102**. The distribution agent **108** may receive instructions from the kiosk management system **102** via a communications network in the form of an electronic mail, instant message, text message, SMS, or any other suitable communication or message.

In one example, a kiosk may be located at a bank and the bank may operate as a distribution agent for the kiosk management system. The kiosk management system may ship to the bank (Mon-Fri) and pay the bank employees to stock the pre-stocked items into the kiosks. In some embodiments, the bank employees or bank as a distribution agent may receive a portion of the profits resulting from items sold at their corresponding kiosk(s). For example, the distribution agent may receive 1% of the profits, such as $0.25 for every $25 earned by the kiosks assigned to the distribution agent.

As such, the kiosk management system can provide benefits to both the distribution agents and the consumer, providing convenience to the consumer while increase traffic and potential business at the distribution agent. Businesses acting as distribution agents hosting the kiosks can be compensated by maintaining the kiosks and thus be incentivized to properly maintain the kiosks for consumers coming to retrieve items. The consumers may also be likely to conduct additional transactions at the business acting as distribution agent. The operations of shipping orders and distribution of the items can be divided between the kiosk management system ordering a consolidated shipment of items to the distribution agent, the distribution agent distributing the items to individual kiosks, and the consumer retrieving the items from the kiosks. As a result, shipping costs charged to the consumer may be close to negligible and the shipping costs to the kiosk management system may be reduced, while providing incentives for the distribution agents as well. Thus, in embodiments, the advantages can be appreciated by all parties involved (e.g., the kiosk management system, distribution agents, and consumers).

FIG. **8** shows a flow diagram illustrating an example method implemented by the kiosk **600** of FIG. **6** to process an order from a consumer for an item. In some embodiments, after the kiosk management system **102** receives a request for an item from a consumer, the kiosk **600** may receive a query from the kiosk management system **102** at **800**. The query may include a request for current inventory information associated with the requested item stored in the kiosk **600**. In response, at **802**, the kiosk **600** may transmit the current inventory information for the requested item to the kiosk management system **102**. Alternatively, the kiosk **600** may send current inventory information for a plurality of items stored in the kiosk **600** to the kiosk management system **102**.

Then, a generated code from the kiosk management system **102** may be received by the kiosk **600**, as shown at **804**. The generated code may be generated by the kiosk management system **102** as described above. When the consumer initiates retrieval of the requested item at **806**, the kiosk **600** may prompt the consumer to enter the generated code via the consumer interface **612**. The kiosk **600** may then receive an entered code at **808**. At **810**, the kiosk **600** may verify the entered code with a generated code locally. When the entered code is verified, the kiosk **600** can be authorized to release the requested item to the consumer, e.g., via vending components **606**. Then at **812**, the kiosk **600** may transmit a communication to the kiosk management system **102** with the entered code and an indication that the entered code is verified, such that the kiosk management system **102** receives an indication that a retrieval of the requested item is initiated with a verified code. Accordingly, the kiosk management system **102** may initiate payment processing of the transaction.

At **814**, the kiosk **600** can receive a confirmation from the kiosk management system **102** that the code is verified, and that payment processing for the requested item has been initiated to complete the transaction. The confirmation from the kiosk management system **102** may also include an authorization from the kiosk management system to release the requested item to the consumer, e.g., via vending components **606**. When the payment processing is complete, finally, at **816**, the kiosk **600** can release the requested item to the consumer.

In an example, if a consumer orders more than one item for retrieval from the kiosk **600**, the kiosk **600** may determine an associated order number with the entered code from the consumer and may be programmed to release the items for that order number via the vending components **606** all at once or in groups. For example, the kiosk **600** may release a group of three items and then wait for those three items to be removed before it releases additional items to prevent items from getting stuck or lodged in the vending components **606** of the kiosk **600**. If the consumer needs help with lodged items at the kiosk **600** or another functional issue with the kiosk **600**, the consumer may communicate with the kiosk management system **102** through the consumer interface **612** of the kiosk **600** or via the mobile application **114** described above. Alternatively, the kiosk **600** and/or the kiosk management system **102** may communicate with the assigned distribution agent **108**, such as via an electronic message, to instruct the distribution agent to attend to the consumer at the kiosk **600**.

Requested items may be reserved and stored in the kiosk **600** for a limited amount of time, for example, for up to 15 business days and 6 weekend days. The designated time period for pick up may be determined by the consumer requesting the items or may be a default length of time designated by the kiosk management system **102** or the kiosk **600**. The kiosk management system **102** or kiosk **600** may send reminder notifications to the consumer or to a recipient to retrieve the items from the designated kiosk. If the items are not picked up within the designated time period, the reserved items may be made available for other consumers to request and purchase. In some embodiments, when one or more of requested custom items that are excluded from the items with which some of the kiosks are pre-stocked, the requested custom items may be returned to

the kiosk management system **102**, inventory entity **104**, external retailer **116**, or seller, so that a portion of the storage area **608** of the kiosk **600** may be made available for items.

FIG. **9** shows an example external interface of a kiosk **900** found in the distribution system shown in FIG. **1**. Kiosk **900** may have a screen interface **912** to display messages to the consumer. The screen interface **912** may be a touchscreen that can also receive input from the consumer. In other embodiment, the screen interface **912** may only provide output to the consumer, and a separate keypad (not shown) may be provided to the consumer to provide input to the kiosk **900**. The kiosk **900** may further include an Item Storage Unit **904** that stores a plurality of items. The Item Storage Unit **904** may be opaque such that the items stored may not be visible to provide security, protection and preservation of items, for example, to keep vitamins out of sunlight or deter thefts of small electronic devices since they cannot be seen, as opposed to being displayed in a visible glass display. The Item Storage Unit **904** may be connected to a Dispensing Mechanism **908** by a Releasing Mechanism **906**. For example, the Releasing Mechanism **906** may be a mechanical arm, hook or any other suitable device that is configured to release a specific item from the Storage Unit **904** and transport it to the Dispensing Mechanism **908**. The Dispensing Mechanism is then configured to provide the requested item to the consumer for retrieval.

The kiosk **900** may further include a payment interface to accept cash or credit cards **910**. Alternatively to conduct payment, the consumer may log-in with pre-registered account information or provide payment information via the screen interface **912**. Additionally, digital advertisements **902**, **914** may be displayed in any external area of the kiosk. The digital advertisements may be manipulated and customized remotely and instantly based on various factors, such as environmental factors, including geographical location, weather, and time, and/or transactional factors, including transaction history, item inventory, etc.

In another embodiment, a consumer may wish to designate a recipient to receive the requested item as a gift. Accordingly, FIG. **10** shows a flow diagram illustrating an example method implemented by the kiosk management system **102** to designate a recipient to receive an item as a gift and enable the recipient to retrieve the item from a kiosk **110**. At **1000**, a consumer may request to purchase an item (e.g., a gift) for a recipient. This request from the consumer may be received by the kiosk management system **102** and may indicate that the requested item will be retrieved from a kiosk **110** by the recipient. Alternatively, the request may be transmitted by the consumer via a retail website **106** or mobile application **114** operated by the retailer **116**. The request may be transmitted via communications network in the form of an electronic mail, instant message, text message, SMS, or any other suitable communication or message.

At **1002**, the kiosk management system **102** may request a desired pick up location. The desired pick up location may be a desired geographic area. The desired pickup location may be designated by the consumer from which the request originated, or alternatively, the kiosk management system **102** may transmit a request to the recipient for a desired pickup location. Thus, the consumer may designate the desired location for the recipient, for example, at a kiosk **110** by the recipient's office. In other embodiments, the recipient may receive a communication from the kiosk management system **102** that a gift has been purchased for him or her, and that he or she may set a desired location for pickup of the gift. The communication may be transmitted via communications network in the form of an electronic mail, instant message, text message, SMS, or any other suitable communication or message, such as through a retail website **106**, link, or mobile application.

Next, based on the location received from either the consumer or the recipient, the kiosk management system **102** may determine a subset of kiosks **110** within a predetermined proximity to the location, as shown at **1004**. The kiosk management system may identify the kiosks within the geographical area that have the item and then ask the requester (whether consumer or recipient) to select one of the identified kiosks within the geographical area. The kiosk management system **102** may also determine whether the gift is in stock in the subset of kiosks **110** within the predetermined proximity of the location.

At **1006**, the kiosk management system **102** may communicate a list of the subset of kiosks **110** having the gift within the predetermined proximity of the location to the consumer or the recipient. The communication may be transmitted via communications network in the form of an electronic mail, instant message, text message, SMS, or any other suitable communication or message, such as through a retail website, link, or mobile application. In the embodiment where the consumer originating the request for the gift designates the preferred location, the list of subset of kiosks is provided to the consumer for selection of a designated kiosk **110**. In the embodiment when the recipient designates the preferred location, the list of the subset of kiosks is provided to the recipient for selection of a designated kiosk **110**.

Subsequently, the gift is reserved at the designated kiosk **110** by the kiosk management system at **1008** so that it may not be retrieved from the kiosk by another consumer. Then at **1010**, the kiosk management system **102** generates and transmits a message to the recipient that the gift is reserved and available at the designated kiosk **110** for retrieval by the recipient. The message may be transmitted via communications network in the form of an electronic mail, instant message, text message, SMS, or any other suitable communication or message, such as through a retail website, link, or mobile application.

When the recipient is notified that the requested item is available at **1010**, the notification may also include a generated code. The generated code can be a generated by the kiosk management system **102** and/or retailer **116**. The generated code may be an alphanumeric code or a bar code as described above. The generated code may be unique to the transaction, consumer, kiosk, and/or item. In other embodiments, the generated code may be associated with the kiosk, consumer, transaction, and/or item for identification purposes. In other embodiments, the kiosk management system **102** includes the generated code in a communication to the kiosk to reserve the requested items at the kiosk at **1008**. The notification may be transmitted via communications network in the form of an electronic mail, instant message, text message, SMS, made available in the mobile application **114** or any other suitable communication or message.

To initiate retrieval of the gift from the designated kiosk **110**, the recipient may be prompted to enter the generated code when recipient arrives at the designated kiosk. In an embodiment, the gift may be reserved for a limited amount of time such that the recipient is requested to retrieve the gift within a certain time period. The time period may be a default time period determined by the kiosk management system **102** or retailer **116**. Alternatively, the time period may be determined by the consumer originating the request. The recipient may be prompted via the external interface of

the designated kiosk, or via a user interface presented on the recipient's mobile device via a mobile application when it is in proximity of the designated kiosk detected by Bluetooth, near-field communications (NFC), radio-frequency integrated device (RFID), wireless network, or other suitable contactless communication. To enter the generated code, the recipient may use the external interface of the kiosk, such as a keypad or a touchscreen to manually enter the code. In another embodiment, the mobile application operated on the recipient's mobile device may communicate the code to the kiosk, e.g., via Bluetooth connection or other wireless communication. Once entered, the designated kiosk **110** may communicate with the kiosk management system **102**, as shown at **1012**, to verify the generated code. Once the code is verified, the kiosk management system **102** may initiate payment processing of the originating consumer's account information and payment information.

Once payment is initiated (or in some embodiments, after the code is verified), the kiosk management system **102** may release the gift for retrieval by the recipient. In embodiments where the kiosk management system **102** sends a communication to the designated kiosk with the generated code, the designated kiosk may verify the generated code locally when the recipient enters the code to release the gift. The transaction is complete when the kiosk management system **102** process payment using the originating consumer's account information and payment information and instructs release of the gift from the designated kiosk **110** to the recipient. Retrieving the gift may involve the recipient going to the designated kiosk to have the gift released from the kiosk so that the recipient can take the gift home. Releasing the gift may include dispensing the gift to the recipient, or unlocking an individual compartment or module securing the gift for the recipient.

FIG. **11** shows a flow diagram illustrating an example process followed by a consumer to gift an item to a recipient. At **1100**, the consumer may browse a retail website or on a mobile application on his or her mobile device. The pre-stocked items available pre-stocked at various kiosks or eligible items to be delivered to various kiosks may have an icon, stating that they are eligible and/or a number of kiosks in your zip code that already have the selected item in stock.

At **1102**, the consumer may select an item. In some embodiments, the consumer may be notified that the dollar amount of the selected item does not substantiate shipping it to the home delivery address of the consumer. The consumer may be offered to add more items to meet a minimum threshold for shipping directly to his or her home. Alternatively, the consumer may be informed that the kiosk management system may deliver the requested item to a designated kiosk for the consumer to pick up. The shipping cost offered to the consumer for kiosk pick-up may be free (and effectively negligible to the kiosk management system) or significantly reduced compared to if the consumer had the item directly shipped to his or her home.

Once the consumer determines the requested item for purchase and delivery method, the website or mobile application may provide a drop down menu or list of every kiosk within a predetermined proximity of the location designated by the consumer. At **1104**, the consumer may then elect to have the requested item(s) picked up at a kiosk.

At **1106**, the consumer may then be prompted whether the requested item is for herself or himself to pick up, or whether it is a gift for a recipient to pick up. In some embodiments, a generated code is sent to the consumer and/or recipient for use in verifying the transaction at the kiosk.

FIG. **12** shows flow diagrams illustrating an example process followed by a consumer to retrieve an item via a kiosk. In another embodiment in which the requested item is a gift for a recipient, referring to FIG. **12**, at **1200**, the consumer may either indicate a preferred location for the recipient or elect to let the recipient choose his or her preferred location. At **1202**, the consumer or recipient may receive a list of kiosks with the requested items in stock that are within a predetermined proximity of the preferred location, either designated by the consumer or the recipient, respectively. The consumer or recipient may then select a different designated kiosk.

Subsequently, at **1204**, the recipient may receive a notification that a gift is available and reserved for the recipient at the designated kiosk. The notification may include a generated code for the recipient to access and retrieve the gift.

The consumer may then may receive a notification or communication at **1206** that the recipient has initiated retrieval of the gift with a verified code. The consumer may receive a confirmation of payment information at **1208**, and then the requested item is released to the recipient at **1210** to complete the transaction.

FIG. **13** shows an example user interface of a mobile application presented on a mobile device via which a recipient can initiate retrieval of a gift from a kiosk. Screen **1304** may include a message to the recipient, indicating the consumer, item, and location, as shown in **1302**. The message may further include a QR code **1304**, or any other suitable code that the recipient may use to initiate retrieval of the gift at the kiosk. The QR code or other code may be scannable by the kiosk via any suitable scanning interface, such as an optical device. In another embodiment, the recipient may be prompted via the external interface of the designated kiosk, or via a user interface presented on the recipient's mobile device via a mobile application when it is in proximity of the designated kiosk detected by Bluetooth, near-field communications (NFC), wireless network, or other suitable contactless communication.

In another embodiment, a consumer may request an item that is excluded from the pre-stocked items in nearby kiosks **110**, or request an item that is currently out of stock in nearby kiosks **110**. FIG. **14** shows a flow diagram illustrating an example method implemented by the kiosk management system to process a request for an item that is excluded from the pre-stocked items in the kiosks. At **1400**, the kiosk management system **102** can receive a request for an item from a consumer. A subset of kiosks **110** may then be determined at **1402** based on a preferred location designated by the consumer. For example, the subset of kiosks **110** may be within a predetermined proximity of the preferred location. The predetermined proximity may be determined by the consumer or a default value determined by the kiosk management system **102**.

At **1404**, a list identifying the subset of kiosks **110** can be provided to the consumer for selection of a designated kiosk. The list may be displayed to the consumer via a webpage or a mobile application operated by the kiosk management system or by the retailer. Alternatively, the list may be provided in a communication via a communications network, in the form of an electronic mail, instant message, text message, SMS, social networking post, or any other suitable communication or message. When a designated kiosk **110** is selected from the list by the consumer, the selection may be transmitted to the kiosk management system **102**, as shown at **1406**. After the kiosk management system **102** receives the selection of the designated kiosk **110**, the kiosk man-

agement system **102** at **1408**, may identify the designated kiosk's corresponding distribution agent **108** that has been assigned by the kiosk management system **102** monitor, maintain and deliver items to the designated kiosk **110**.

Subsequently at **1410**, the kiosk management system **102** may instruct the corresponding distribution agent **108** to deliver the requested item in a consolidated shipment with other items for the corresponding distribution agent to deliver to individual kiosks in the subset of kiosks **110** to which the distribution agent **108** is assigned. Instructions may be provided to the distribution agent **108** through electronic transmissions communicated over any suitable communications network, such as email, text, or SMS transmitted via a telecommunications network. Alternatively, instructions and assignments of the individual kiosks assigned to the distribution agent **108** may be communicated to the distribution agent **108** via postal service or any suitable mail service. The kiosk management system **102** may also call the distribution agent **108** to provide instructions verbally over the telephone using an automated message or a representative of the kiosk management system **102**. Then, the kiosk management system **102** may instruct a consolidated shipment of items, including the requested item, to the distribution agent **108**. In some embodiments, delivery to the distribution agent **108** may involve the kiosk management system **102** instructing an inventory entity **104** to ship the items.

At **1412**, the kiosk management system **102** may generate a code for association with the transaction for the requested item. As described above, the code may be, e.g., a randomly generated code, a bar code, etc. In some embodiments, the code may be generated using a unique identifier for the transaction, the requested item, the consumer, and/or the designated kiosk.

After generation of the code, the kiosk management system **102** may send a communication to the consumer and/or the designated kiosk **110** at **1414**. The communication to the designated kiosk **110** may include the generated code. The communication to the consumer may include the generated code, as well as a notification to the consumer that the requested item has been delivered and is ready/reserved for the consumer to pick up at the designated kiosk. The communication may be via a communications network, in the form of an electronic mail, instant message, text message, SMS, social networking post, or any other suitable communication or message.

At **1416**, when the consumer initiates retrieval of the requested item for the designated kiosk **110**, the designated kiosk may prompt the consumer via an external interface (as will be described below) to enter the generated code. In one embodiment, the kiosk transmits the generated code to the kiosk management system **102** for verification. In other embodiments, the designated kiosk **110** verifies the generated code locally at the designated kiosk. When the generated code is verified, the kiosk management system **102** may authorize the designated kiosk **110** to release the requested item to the consumer. In yet other embodiments, when the generated code is verified (either by the kiosk management system **102** or the designated kiosk **110**), the designated kiosk **100** is automatically authorized to release the requested item to the consumer without requiring further instruction or authorization from the kiosk management system.

Finally at **1418**, the transaction for the requested item is completed when the kiosk management system **102** initiates payment processing for the transaction using the consumer's account information and payment information. In some embodiments, the designated kiosk then releases the requested item to the consumer.

According to embodiments described herein, a recipient or other consumer may have a variety of items reserved for pick up at a kiosk **110** for a reduced shipping cost to the consumer. Reduced operations, inventory, and delivery costs to the kiosk management system **102** and/or retailer **116** may also be significantly reduced. Further the kiosk management system **102** and/or retailer **116** may offer a broader selection of items. For example, the consumer may not be limited to the items that are pre-stocked in, or pre-selected for, specific kiosks in particular locations. The consumer may request that any item available from the kiosk management system **102** and/or retailer **116** be delivered, using distribution agents, to a kiosk of the consumer's choice, for a reduced shipping cost compared to the cost of shipping had the consumer requested deliver directly to his or her home.

FIG. **15** shows a flow diagram illustrating an example process followed by a consumer to retrieve an item via a kiosk. In an embodiment where the consumer has requested an item for herself or himself, referring to FIG. **15**, at **1500**, the consumer may indicate a preferred pickup location. The pickup location may be automatically detected to be the consumer's billing or shipping zip code, or the GPS location of the mobile device of the consumer may be detected. Alternatively, the consumer may manually designate another location, such as a future location at which the consumer will be located.

Next, at **1502**, the consumer may receive a list of kiosks with the requested items in stock that are within a predetermined proximity of the preferred location. The consumer may then select a designated kiosk at **1504**.

Subsequently, at **1506**, the consumer may receive a notification that the requested item is available and reserved for the consumer at the designated kiosk. The notification may include a generated code for the consumer to access and retrieve the requested item.

The consumer may then travel to the designated kiosk at **1508**, and enter the generated code at **1510**. When the entered code is verified, at **1512**, the consumer may receive another notification or communication that the entered code was verified and that retrieval of the requested item has been initiated. The consumer may receive a confirmation of payment information at **1514**, and then the requested item is released at **1516** to complete the transaction.

As described herein, in some embodiments a mobile application operated on a mobile device may be used by a consumer to conduct a transaction for a requested item. For example, any of the steps described in FIGS. **11**, **12**, and **15** may be conducted using a mobile application.

FIG. **16** shows an example mobile device via which a recipient can initiate retrieval of a gift from a kiosk. The mobile device **1600** may include a processor device **1612** and a non-transitory computer readable medium **1624**. The processor device **1612** may be operatively coupled to several hardware components. For example, the processor device **1612** may be coupled to an input/output device **1604** (e.g., keyboard) and display **1606** (e.g., LCD screen) to provide an interface to the consumer. To communicate with networks and transmit and receive data, the processor device **1612** may be further coupled to an antenna **1602** or radio-frequency integrated device **1608** (RFID). The mobile device **1600** may be configured to connect to the Internet, Wi-Fi, or other telecommunication network(s). The mobile device may be further configured to connect via Bluetooth. To determine a location of the mobile device, there may be a global positioning system (GPS) module **1610**.

The processor device **1612** may be further coupled to a data store **1610** storing information related to the mobile device and/or the consumer. For example, the mobile device identification number (e.g., IMEI), or mobile device identifier (e.g., phone number). Additionally, the computer readable medium **1624** may include several software modules containing code executable by the processor device to perform one or any of the functions described above. For example, the computer readable medium **1624** may include an operating system module **1616**, a location engine **1618**, a mobile application engine **1620**, and a communication engine **1622**. The location engine **1618** may be in communication with the GPS module **1610** to determine and transmit a location of the mobile device. The mobile application engine **1620** may operate a mobile application on the operation system maintained by the operating system module **1616** to conduct the functions described in at least FIGS. **11**, **12** and **15**. The mobile device **1600** may be configured to transmit and receive messages, communications, and data using the communications engine **1622**.

FIG. **17** shows an example user interface of a mobile application presented on a mobile device via which a consumer can select a kiosk from which to retrieve an item according to at least an embodiment. For example, the consumer may launch the mobile application on his or her mobile device (e.g., mobile phone, tablet) or view a network site operated by the kiosk management system showing screenshot **1700**. The consumer can view websites from a laptop computer, mobile device, or any other computing device capable of connecting to the Internet through a wire or wireless connection. As shown in FIG. **17**, the consumer may be prompted with a Search Box **1702**. The consumer may enter keywords, a specific item, category, type, price, identification number, etc. into the Search Box **1702**. For example, as shown in FIG. **17** in Search Box **1702**, the consumer may search for a "tablet under $100." Other examples of search inquires may be "organic dog food", "gifts under $25", "ISBN 123456789", "Brand XYZ apparel in San Francisco", or any other suitable search query with any number of restrictions or limitations based on the consumer's preferences, including but not limited to, price, category, product information, identifiers, location, etc.

In an embodiment, a location of the consumer may be automatically detected. For example, on a mobile device such as a mobile smartphone, GPS may be used to determine the consumer's location on the street. In another example, an IP address or other location identifying information may be determined from a computer the consumer is using to access the network site. When the location of the consumer is determined, a list of relevant items based on the search query may be provided in **1704** to the consumer, and a list of the nearest locations of kiosks **1710**. The list of relevant items may include the item name and price, or any other relevant information. In some embodiments, the consumer may click on the item to get more item information, such as reviews and detailed description. The list of closest kiosks **1710** to the consumer's location may include the distance from the consumer **1708**, and the list may be arranged by distance. For example, the closest kiosk is 0.5 miles away and may be listed first, and the further kiosk that is 5 miles away is listed last, as shown in the list **1710** arranged by distance **1708**.

Each kiosk may have an option for the consumer to reserve the item at the designated kiosk, as shown by **1706**. The consumer may select to reserve the item via a link or button for the consumer to click on using a mouse or select using his or her finger on a touchscreen, or any other suitable method for the consumer to select the option to reserve in **1706**. The option of reserve **1706** may further provide other details to the consumer, for example, which relevant items are available at that kiosk, and associated reserve fees. For example, the consumer may wish to go to the nearest kiosk, Kiosk A, which is 0.5 miles away from the consumer's location. The consumer may be able to select Kiosk A and view which tablet versions shown in the Result item list **1704**, are available at Kiosk A. The consumer may have the option to reserve a Table model 200 for $75.99 at Kiosk A for a $5 reserve fee. If the consumer wants a lower reserve fee, the consumer may select another kiosk, such as Kiosk B 1 mile away, to see if the Tablet model 200 is available and only pay a reserve fee of $3. Alternatively, the consumer may also choose another relevant item, such as the Tablet Deluxe for $99.99 and only pay a $2 reserve fee at Kiosk C, 5 miles away. Accordingly, the consumer is given flexibility in choosing which relevant items to purchase, where to purchase and pick them up, and at what total price (including reserve fee). In other embodiments, there may be no reserve fee. The reserve fee may be determined based on location, transaction information (e.g., price of the item), convenience to the consumer, location, and/or any other variables. In another embodiment, the same item may have varying prices at different kiosks and locations.

FIG. **18** shows an example user interface of a mobile application presented on a mobile device via which a consumer can opt to hold an item at a kiosk for a predetermined amount of time without purchasing the item according to at least an embodiment. After the consumer selects an item, such as the Table model 200 for $75.99 at Kiosk B 1 mile away, the consumer may be provided with screenshot **1800** on the mobile application, or a similar webpage on the network site. The consumer may be presented with an option to "Log-In to Reserve and Purchase" **1802**, or an option to merely hold the item for a pre-determined amount of time, for example, an option to "Hold for 4 Hours" **1804**. When the consumer selects "Hold for 4 Hours" **1804**, the item may held for that consumer for the pre-determined amount of time such that when that window of time elapses, the item is no longer reserved and may be purchased or reserved by another. For example, the Tablet model 200 for $75.99 may be reserved without processing any payment information or initiating any payment process until the consumer goes to initiate retrieval of the Tablet model 200 within 4 hours. However, if the consumer fails to initiate retrieval of the Tablet Model 200 within 4 hours, another consumer may reserve and purchase it.

When the consumer selects "Log-In to Reserve and Purchase" **1802**, then the screenshot **1900** of FIG. **19** may be provided to the consumer. FIG. **19** shows an example user interface of a mobile application presented on a mobile device via which a consumer can select purchase options. There may be multiple options for the consumer to purchase the requested item and initiate payment. One option may be to "Log-In With Existing Account" **1902**. For example, as described previously, the consumer may be pre-registered with the kiosk management system and/or retailer providing the requested item. The consumer may select **1902** and log-in with his or her pre-registered account information, where a payment process is initiated with saved information associated with the consumer's registration, for example a saved credit card, billing address, etc. The consumer may also select to "Create New Account" **1904** if the consumer is not pre-registered and does not have an existing account with the kiosk management system and/or retailer. When selected to "Create New Account" **1904**, the consumer may be prompted to provide various account and payment infor-

mation that is saved with the kiosk management system and/or retailer. Another option may be purchase with a guest account and "Purchase Without an Account" **1906**. The consumer may be prompted to provide payment information that is not saved for future transactions. Another option provided to the consumer may be "Hold" **1908**, where the consumer is prompted to provide payment information, but the item is reserved without processing the payment information until retrieval is initiated, and then the payment process is initiated when the consumer goes to the kiosk to initiate retrieval of the requested item.

FIG. **20** shows an example user interface of a mobile application presented on a mobile device via which a consumer can indicate that he or she is at a kiosk to retrieve the item. After the purchase of the request item has been made, as shown in FIG. **11** or the item has been put on hold, the consumer may then proceed to the designated kiosk. An example screenshot **2000** may be provided to the consumer on his or her mobile device when initiating retrieval of the requested item at the kiosk. The screenshot **2000** may show an order number **2002**, including the requested item and relevant item information **2008**, a location **2004**, and a status **2006** of the order. When the consumer is at the kiosk, the consumer may click on the "At Kiosk" **2010**, and a code may be displayed on the mobile application on the mobile device (not shown). The code may be a quick response (QR) code, or any other matrix or two dimensional barcode, a one dimensional barcode, an alphanumeric code, or any other suitable code. The code may be scanned by the kiosk, or may be manually entered by the consumer into a screen interface or a keypad on the kiosk. The status **2006** of the order may be then change from "Pending" to "Ready for Pickup," or "Picked up at 7:30 PM Jul. 8, 2013." The status **2006** of order may be updated in real-time. For example, if the requested item needs to be delivered to the designated kiosk, the status may indicate "In Transit" before it is changed to "Ready for Pickup."

FIG. **21** shows example user interfaces of a mobile application presented on a mobile device via which a consumer may search for kiosks. In some instances, the consumer may not have a specific item or other search queries associated with the item. In an embodiment, the consumer may search for kiosks based on location. Screenshots **2100** show an example method of a consumer making a request for items based on location first. As shown in FIG. **21**, in screenshot **2102**, the consumer may wish to find the nearest kiosk. For example, the consumer may be visiting an aunt in another town the consumer is not familiar with, but would like to purchase a gift to bring to his or her aunt. The consumer may enter an address, zip code, or city, for example, his or her aunt's address or city. Alternatively, if on his or her mobile device, the consumer may select to "Use Current Location" **2106** to have his or her GPS location automatically detected. The nearest kiosk may then be displayed in **2110**.

Subsequently, screenshot **2104** may be displayed when the consumer selects the resulting nearest kiosk (in this example, 123 Main St.). The screenshot **2104** may indicate the designated kiosk **2112**, in this example, by displaying the address. In another embodiment, an identifier for the kiosk may be displayed, or location (e.g., Powell St. BART Station Kiosk). A list of the top items sold or requested in the kiosk may be listed in **2116**. In the list **2116**, the consumer may further provide search queries in Search Box **2114**. The Item List **2116** may include the top 50 or 100 items, ranked by popularity, and include a quantity of each item stocked in the kiosk indicated in **2112**. Other information, such as price, may be displayed. Further, the consumer may select an item to view additional details, such as reviews, images, and/or item description.

Next, FIG. **22** shows an example user interface presented on a kiosk via which a consumer may scan or enter a code to initiate retrieval of the item from the kiosk. After the consumer has selected the item from list **2116**, the consumer may receive a QR code or generated code and approach the kiosk indicated in **2112**. The kiosk may display on a screen interface to "Scan QR Code" **2210**. In another embodiment, the consumer may be prompted by the kiosk to "Enter Code" **2212**, for example, if the generated code is a series of alphanumeric characters. The kiosk may be configured to scan other one and two-dimensional barcodes, or other suitable barcodes or images. The kiosk may then provide the consumer with options to "Select and Buy Right Now" **2214**, and subsequently release and dispense the requested item(s) to the consumer. Alternatively, the consumer may elect to search again **2216** and be provide with a "Search Box" **2218** to provide search queries for items in designated kiosk that the consumer is interacting with or other kiosks. Alternatively, the consumer may be routed to the screenshot **2104** of FIG. **21**, but displayed on the kiosk screen interface.

Many advantages and benefits are achieved by having the requested items delivered to a kiosk for a consumer or a recipient to pick up, as described herein in this disclosure. For example, with consolidated shipping to the network of kiosks involving a network of distribution agents, the kiosk management system and/or retailers can charge lower shipping rates for the consumer. Thus, consumers can get a lower total actual sales price on the item because the retailer or kiosk management system no longer needs to operate or pay for individual shipping to the home. Accordingly, the kiosk management system described herein provides efficient, cost-reducing, convenient, and stream-lined distribution of a variety of items to a multitude of consumers.

In current electronic transactions, many network retailers may offer free shipping if the consumer purchases special items or if the total amount of the purchase exceeds a minimum threshold. For example, a consumer may be offered free shipping only for promotional items (e.g., all shoe purchases for a particular brand ship for free), or the consumer may receive free shipping for all orders over $25. However, in the present disclosure, the consumer may request a singular item that may not exceed the minimum threshold for inclusive or automatic free shipping, but may receive a reduced shipping cost by electing to have the requested item delivered to a designated kiosk for pick-up instead of paying full shipping for it to be delivered individually to the consumer's home.

According to embodiments described herein, an end consumer (e.g., consumer, recipient) may be able to have a variety of items available for pick up at a customized designated location for a reduced shipping cost to the consumer. Reduced operations, inventory, and delivery costs to the kiosk management system and/or external retailer may also be significantly reduced. Further the kiosk management system and/or external retailer may offer a broader selection of items. For example, the consumer may not be limited to pre-stocked items that are determined for specific kiosks in particular locations based on transaction data analysis. The consumer may request any item that can be delivered, using distribution agents, to a designated kiosk of the consumer's choice, for a reduced shipping cost compared to if the consumer had the requested item delivered directly to his or her home.

Further, additional benefits to the consumer include leveraged partnerships between the kiosk management system and other entities at which kiosks may be located and maintained at. For example, promotions, such as coupons and discounts, may be provided for businesses at which kiosks are located at to incentivize consumers to select kiosks at the businesses. Additionally, businesses are incentivized to host and maintain kiosks for the kiosk management system as it may increase consumer flow to the business and potential transactions with the offered promotions.

The kiosk management system provides a sustainable business model with consumer conveniences and advantages to make shipping of a plurality of items more profitable to the kiosk management system and/or retailer while keeping shipping costs to the consumer low. Thus, a broad variety of items may be delivered to any consumer within reasonable parameters that the consumer, sellers/retailers and the kiosk management system with the use of distribution agents.

In a simplified example a distribution agent may be assigned to 100 kiosks in a designated geographical location. The distribution agent may be responsible for the delivery of pre-stocked items, such as a daily vitamin packet, to the 100 kiosks. It would be very costly for the kiosk management system, or a vitamin provider to provide individual vitamin packets to 100 kiosks within a local area, or to deliver hundreds of vitamin packets to a plurality of individual consumers who may or may not be within the same local area. Thus, the kiosk management system or vitamin provider may deliver a consolidated shipment of hundreds of vitamin packets to the distribution agent. The distribution agent may divide the shipment into the appropriate quantities for each of the 100 kiosks the distribution agent is assigned to maintain. For example, kiosks located in heavily trafficked areas may be stocked with more vitamin packets (e.g., downtown in a business-heavy area) than kiosks in more remote areas (e.g., residential suburbs).

The kiosk management system or retailer (e.g., vitamin provider) could never profitably deliver to every home of individual consumers or to the 100 individual kiosks with the varying inventories, so the entire shipments is consolidated to the distribution agent. As such, the distribution agent delivers the requested item to the "last mile."

In some embodiments when the requested item is included in the pre-stocked items that are typically available at some of the kiosks in the plurality of networked kiosks, the kiosk management system may provide the consumer with 24 hour convenience, spontaneous "on-the-spot" item purchases, and secure item pick up on millions of items for lower prices at a customized location convenient to the consumer.

In an alternative embodiment, an external retailer or seller may provider the items to be distributed by the kiosk management system. The sellers and retailers are also benefitted by the use of the plurality of networked kiosks and distribution agents, as sellers and retailers can provide a wide variety of items, including very low cost items, to be delivered to consumers over a wider range of locales without increasing their delivery and shipping operation costs.

The kiosk management system in conjunction with its sellers to provide a multitude of items, including low priced items that are typically too expensive to ship directly to the home of a consumer. The consumer can order one low priced item or a number of eligible pre-stocked items and have it sent to a designated kiosk. The kiosk management system may manage a plurality of networked kiosks, for example; including 20,000 kiosks over an expanded geographical location. The delivery of the requested items may be free to the consumer when the requested items are picked up at the consumer designated kiosk. The kiosk management system can scale this infrastructure and may be able to lower prices on millions of items because consolidated shipping of the items are delivered to individual distribution agents who work in the specific geographies and maintain/manage the plurality of kiosks managed by the kiosk management system.

The benefits appreciated and achieved by a kiosk of the plurality of networked kiosk to the consumer, according to at least one embodiment, include at least a wide variety and number of items available, pre-stocked and instantaneously to a consumer. The kiosk may be configured to hold hundreds of items of a specific size and weight. Additionally, with the infrastructure of a network of distribution agents to provide daily deliveries to individual kiosks and receive deliveries in a consolidated manner, passes shipping cost savings to the consumer by sharing shipping costs between the consumer and the kiosk management system and/or retailer, thus creating lower prices for the requested items. The kiosks also provide "on the spot" and on-demand high turn-around items in available empty spots in the storage area of the kiosk.

In additional embodiments, the kiosk may further provide suggestions and recommendations of these "on the spot" items for the consumer to additionally purchase while at the kiosk retrieving the original requested item. The kiosk allowed the consumer to have secure, 24 hour access to requested items and access to other items that are pre-stocked in the kiosk. Convenience to the consumer is also achieved by having the kiosks initiate payment processing directly with the kiosk management system, in which a pre-registered, existing consumer account may be used. Some embodiments may involve a mobile device, in which the consumer may utilize a mobile application operated on a mobile device to conduct transactions to request an item at a kiosk. In other embodiments, the request for requested items may be made over the Internet on a laptop, desktop computer, or other device capable of connecting to the Internet. The existing account of the consumer may be access by the mobile device, or on a desktop or laptop computing device, or any suitable device.

From a mobile device of the consumer, the consumer may be able to view and browse items in the mobile application operated on the mobile device and can search all kiosks to find a requested item. For example, a consumer may request medication for a baby at 2 am when all drugstores are closed, a razor at 9 pm when the consumer has landed in a new city for a business meeting, or a new tablet model that is the must have item and it is Christmas morning. Convenient locations of the kiosks may be in retail shopping centers, bank parking lots and gas stations—locations that may already be often frequented by consumers. Additionally, delivery to and pick up from the kiosk may be a negligible to the kiosk management system and/or retailer/seller such that the consumer essentially receives free delivery of the requested item(s).

Further features offered by the kiosk management system include the option for the consumer to request an item to a recipient as a gift for delivery to another kiosk in another location in real-time instantaneously. The recipient or consumer may be able to instantly order and pick up a requested item at a designated kiosk.

Additionally, consumers that are not registered with the kiosk management system or providing retailer may conduct a transaction. Thus, the consumer may not need to be

pre-registered. As such, a consumer without a pre-registered account, a consumer visiting from another country, or a consumer without current access to his or her credit card can request items to a designated kiosk via the Internet or the mobile application, and pay cash for the requested item at the kiosk during pickup. The kiosks may be configured to accept cash payment for requested items and e-mail a receipt to the consumer. In an example, a kiosk may be co-located at a bank, and an ATM machine may be located near the kiosk to make cash payment for requested items convenient for consumers.

In another embodiment, the kiosk can co-promote with another business at its location. For example, if a consumer selects a kiosk outside a coffee shop, the kiosk management system may co-promote with the coffee shop to offer a promotion at the kiosk so that between 2 and 6 pm the kiosk can issue an e-mail or print a coupon for $2.00 off a drink ordered at that coffee shop when the consumer picks up his or her requested item.

Additionally, in another embodiment, and shown in FIG. **9**, the kiosks may provide digital advertisements (e.g. Lighted Ads **902**) that may be manipulated and customized remotely by the kiosk management system. The advertisements may be customized based on the location of the kiosk, current inventory of items, and/or transaction history and analysis of best-selling items at the designated kiosk. For example, if a particular item has ran out, such as umbrellas, the kiosk may manipulate its advertisements for a secondary, replacement item, such as ponchos. In another example, a kiosk located at a sports stadium may display more advertisements related to sports paraphernalia, bars/restaurants in the area, etc. In other embodiments, advertisements may be customized remotely and instantly based on environmental factors, such as geographical location, weather and time. For example, advertisements for a new book released may be shown during popular gifting holidays, such as Christmas.

In another embodiment, wireless (e.g., Wi-Fi) service may be offered at the kiosk so that a consumer may pay a fee to access a Wi-Fi hotspot at a kiosk. Free or reduced price Wi-Fi service could be provided to a consumer making a purchase through the kiosk. The consumer may pay for Wi-Fi service from the kiosk (monthly fee or one-time) and access the Internet nearby, for example, in his or her car in a parking lot of the location of the kiosk.

The benefits of kiosks in the kiosk management system according to at least one embodiment include the ability to distribute and provide a variety of items at low cost and additionally accept cash payments. Low shipping costs can be achieved by the kiosk management system providing efficient consolidated shipments to a distribution agent, who then may deliver the individual items to the individual plurality of kiosks.

Sales may be increased especially for low cost items that, if shipped individually directly to consumers' homes, may not profitably sell because of high shipping and operation costs associated with individual shipping of low priced items. Thus with the kiosks, low cost items may be distributed and sold to consumers in a secure manner. Even more shipping cost savings are appreciated with high cost items. Accordingly, embodiments and advantages achieved by embodiments can be extended to and appreciated by the distribution of both low and high cost items.

Further, individual kiosks may be placed and removed quickly. Kiosks may be placed in geographical locations that are more remote since they can operate autonomously without constant human supervision, unlike brick-and-mortar store locations needing large areas for construction and human intervention/operation. Alternatively, kiosks may be placed in locations that can provide convenient access to consumers 24 hours a day and 7 days a week, while store locations (e.g., brick-and-mortar retail locations) are limited by hours of operation. Thus the kiosk infrastructure may be updated and modified quickly and inexpensively to autonomously distribute a plurality of items to consumers. The kiosks may be conveniently placed with a variety of business, for example, creating partnerships with gas stations, coffee shops, convenient stores and banks to provide further services, discounts and convenient to the consumer. The kiosk management system can partner with large gas operators to give cents off a gallon of gas when a consumer uses the kiosk. Businesses hosting the kiosks may also benefit from increased business and visits from consumers retrieving items from the kiosks. In some embodiments, the merchants (e.g., businesses) and the kiosk management system may have a symbiotic relationship so that the merchant can act as a distribution agent for the kiosk management system to stock the kiosks, while the kiosk management system provides increased traffic and business to the merchant.

Other applications of the kiosk management system may be extended and application to any suitable item, such as prescription drugs and health/beauty products. Independent pharmacy owners may operate as distribution agents and/or host kiosks, using kiosks as 24 hour pick up places for consumer to access products like a bottle of Tylenol, hair gel, brushes, etc. Immediate access and pick up at the kiosk may be faster than mail order and local to the area of the consumer. In an embodiment, the consumer can provide his or her prescription to the kiosk management system and/or pharmacy provider, thus offering the consumer's prescriptions

FIG. **23** illustrates aspects of an example environment for implementing aspects in accordance with various embodiments. As will be appreciated, although a network-based environment is used for purposes of explanation, different environments may be used, as appropriate, to implement various embodiments. The environment includes an electronic client device **2302**, which can include any appropriate device operable to send and receive requests, messages or information over an appropriate network **2304** and convey information back to a user of the device. Examples of such client devices include personal computers, cell phones, handheld messaging devices, laptop computers, set-top boxes, personal data assistants, electronic book readers and the like. The network can include any appropriate network, including an intranet, the Internet, a cellular network, a local area network or any other such network or combination thereof. Components used for such a system can depend at least in part upon the type of network and/or environment selected. Protocols and components for communicating via such a network are well known and will not be discussed herein in detail. Communication over the network can be enabled by wired or wireless connections and combinations thereof. In this example, the network includes the Internet, as the environment includes a network server **2306** for receiving requests and serving content in response thereto, although for other networks an alternative device serving a similar purpose could be used as would be apparent to one of ordinary skill in the art.

The illustrative environment includes at least one application server **2308** and a data store **2310**. It should be understood that there can be several application servers, layers, or other elements, processes or components, which may be chained or otherwise configured, which can interact

to perform tasks such as obtaining data from an appropriate data store. As used herein the term "data store" refers to any device or combination of devices capable of storing, accessing and retrieving data, which may include any combination and number of data servers, data stores, data storage devices and data storage media, in any standard, distributed or clustered environment. The application server can include any appropriate hardware and software for integrating with the data store as needed to execute aspects of one or more applications for the client device, handling a majority of the data access and business logic for an application. The application server provides access control services in cooperation with the data store and is able to generate content such as text, graphics, audio and/or video to be transferred to the user, which may be served to the user by the network server in the form of HyperText Markup Language ("HTML"), Extensible Markup Language ("XML") or another appropriate structured language in this example. The handling of all requests and responses, as well as the delivery of content between the client device **2302** and the application server **2308**, can be handled by the network server. It should be understood that the network and application servers are not required and are merely example components, as structured code discussed herein can be executed on any appropriate device or host machine as discussed elsewhere herein.

The data store **2310** can include several separate data tables, data stores or other data storage mechanisms and media for storing data relating to a particular aspect. For example, the data store illustrated includes mechanisms for storing production data **2312** and user information **2316**, which can be used to serve content for the production side. The data store also is shown to include a mechanism for storing log data **2314**, which can be used for reporting, analysis or other such purposes. It should be understood that there can be many other aspects that may need to be stored in the data store, such as for page image information and to access right information, which can be stored in any of the above listed mechanisms as appropriate or in additional mechanisms in the data store **2310**. The data store **2310** is operable, through logic associated therewith, to receive instructions from the application server **2308** and obtain, update or otherwise process data in response thereto. In one example, a user might submit a search request for a certain type of item. In this case, the data store might access the user information to verify the identity of the user and can access the catalog detail information to obtain information about items of that type. The information then can be returned to the user, such as in a results listing on a network page that the user is able to view via a browser on the user device **2302**. Information for a particular item of interest can be viewed in a dedicated page or window of the browser.

Each server typically will include an operating system that provides executable program instructions for the general administration and operation of that server and typically will include a computer-readable storage medium (e.g., a hard disk, random access memory, read only memory, etc.) storing instructions that, when executed by a processor device of the server, allow the server to perform its intended functions. Suitable implementations for the operating system and general functionality of the servers are known or commercially available and are readily implemented by persons having ordinary skill in the art, particularly in light of the disclosure herein.

The environment in one embodiment is a distributed computing environment utilizing several computer systems and components that are interconnected via communication links, using one or more computer networks or direct connections. However, it will be appreciated by those of ordinary skill in the art that such a system could operate equally well in a system having fewer or a greater number of components than are illustrated in FIG. **23**. Thus, the depiction of the system **2300** in FIG. **23** should be taken as being illustrative in nature and not limiting to the scope of the disclosure.

The various embodiments further can be implemented in a wide variety of operating environments, which in some cases can include one or more user computers, computing devices or processing devices which can be used to operate any of a number of applications. User or client devices can include any of a number of general purpose personal computers, such as desktop or laptop computers running a standard operating system, as well as cellular, wireless and handheld devices running mobile software and capable of supporting a number of networking and messaging protocols. Such a system also can include a number of workstations running any of a variety of commercially-available operating systems and other known applications for purposes such as development and data store management. These devices also can include other electronic devices, such as dummy terminals, thin-clients, gaming systems and other devices capable of communicating via a network.

Most embodiments utilize at least one network that would be familiar to those skilled in the art for supporting communications using any of a variety of commercially-available protocols, such as Transmission Control Protocol/Internet Protocol ("TCP/IP"), Open System Interconnection ("OSI"), File Transfer Protocol ("FTP"), Universal Plug and Play ("UpnP"), Network File System ("NFS"), Common Internet File System ("CIFS") and AppleTalk. The network can be, for example, a local area network, a wide-area network, a virtual private network, the Internet, an intranet, an extranet, a public switched telephone network, an infrared network, a wireless network and any combination thereof.

In embodiments utilizing a network server, the network server can run any of a variety of server or mid-tier applications, including Hypertext Transfer Protocol ("HTTP") servers, FTP servers, Common Gateway Interface ("CGI") servers, data servers, Java servers and business application servers. The server(s) also may be capable of executing programs or scripts in response requests from user devices, such as by executing one or more network applications that may be implemented as one or more scripts or programs written in any programming language, such as Java®, C, C# or C++, or any scripting language, such as Perl, Python or TCL, as well as combinations thereof. The server(s) may also include data store servers, including without limitation those commercially available from Oracle®, Microsoft®, Sybase® and IBM®.

The environment can include a variety of data stores and other memory and storage media as discussed above. These can reside in a variety of locations, such as on a storage medium local to (and/or resident in) one or more of the computers or remote from any or all of the computers across the network. In a particular set of embodiments, the information may reside in a storage-area network ("SAN") familiar to those skilled in the art. Similarly, any necessary files for performing the functions attributed to the computers, servers or other network devices may be stored locally and/or remotely, as appropriate. Where a system includes computerized devices, each such device can include hardware elements that may be electrically coupled via a bus, the elements including, for example, at least one central pro-

cessing unit ("CPU"), at least one input device (e.g., a mouse, keyboard, controller, touch screen or keypad) and at least one output device (e.g., a display device, printer or speaker). Such a system may also include one or more storage devices, such as disk drives, optical storage devices and solid-state storage devices such as random access memory ("RAM") or read-only memory ("ROM"), as well as removable media devices, memory cards, flash cards, etc.

Such devices also can include a computer-readable storage media reader, a communications device (e.g., a modem, a network card (wireless or wired), an infrared communication device, etc.) and working memory as described above. The computer-readable storage media reader can be connected with, or configured to receive, a computer-readable storage medium, representing remote, local, fixed and/or removable storage devices as well as storage media for temporarily and/or more permanently containing, storing, transmitting and retrieving computer-readable information. The system and various devices also typically will include a number of software applications, modules, services or other elements located within at least one working memory device, including an operating system and application programs, such as a client application or network browser. It should be appreciated that alternate embodiments may have numerous variations from that described above. For example, customized hardware might also be used and/or particular elements might be implemented in hardware, software (including mobile software, such as applets) or both. Further, connection to other computing devices such as network input/output devices may be employed.

Storage media and computer readable media for containing code, or portions of code, can include any appropriate media known or used in the art, including storage media and communication media, such as but not limited to volatile and non-volatile, removable and non-removable media implemented in any method or technology for storage and/or transmission of information such as computer readable instructions, data structures, program modules or other data, including RAM, ROM, Electrically Erasable Programmable Read-Only Memory ("EEPROM"), flash memory or other memory technology, Compact Disc Read-Only Memory ("CD-ROM"), digital versatile disk (DVD) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices or any other medium which can be used to store the desired information and which can be accessed by the a system device. Based on the disclosure and teachings provided herein, a person of ordinary skill in the art will appreciate other ways and/or methods to implement the various embodiments.

The various illustrative logical blocks and modules described in connection with the embodiments disclosed herein can be implemented or performed by a machine, such as a general purpose processor device, a digital signal processor (DSP), an application specific integrated circuit (ASIC), a field programmable gate array (FPGA) or other programmable logic device, discrete gate or transistor logic, discrete hardware components, or any combination thereof designed to perform the functions described herein. A general purpose processor device can be a microprocessor, but in the alternative, the processor device can be a controller, microcontroller, or state machine, combinations of the same, or the like. A processor device can include electrical circuitry configured to process computer-executable instructions. In another embodiment, a processor device includes an FPGA or other programmable device that performs logic operations without processing computer-executable instructions. A processor device can also be implemented as a combination of computing devices, e.g., a combination of a DSP and a microprocessor, a plurality of microprocessors, one or more microprocessors in conjunction with a DSP core, or any other such configuration. Although described herein primarily with respect to digital technology, a processor device may also include primarily analog components. For example, some or all of the signal processing algorithms described herein may be implemented in analog circuitry or mixed analog and digital circuitry. A computing environment can include any type of computer system, including, but not limited to, a computer system based on a microprocessor, a mainframe computer, a digital signal processor, a mobile computing device, a device controller, or a computational engine within an appliance, to name a few.

The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense. It will, however, be evident that various modifications and changes may be made thereunto without departing from the broader spirit and scope of the disclosure as set forth in the claims.

Other variations are within the spirit of the present disclosure. Thus, while the disclosed techniques are susceptible to various modifications and alternative constructions, certain illustrated embodiments thereof are shown in the drawings and have been described above in detail. It should be understood, however, that there is no intention to limit the disclosure to the specific form or forms disclosed, but on the contrary, the intention is to cover all modifications, alternative constructions and equivalents falling within the spirit and scope of the disclosure, as defined in the appended claims.

The use of the terms "a" and "an" and "the" and similar referents in the context of describing the disclosed embodiments (especially in the context of the following claims) are to be construed to cover both the singular and the plural, unless otherwise indicated herein or clearly contradicted by context. The terms "comprising," "having," "including," and "containing" are to be construed as open-ended terms (i.e., meaning "including, but not limited to,") unless otherwise noted. The term "connected" is to be construed as partly or wholly contained within, attached to, or joined together, even if there is something intervening. Recitation of ranges of values herein are merely intended to serve as a shorthand method of referring individually to each separate value falling within the range, unless otherwise indicated herein and each separate value is incorporated into the specification as if it were individually recited herein. All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or exemplary language (e.g., "such as") provided herein, is intended merely to better illuminate embodiments of the disclosure and does not pose a limitation on the scope of the disclosure unless otherwise claimed. No language in the specification should be construed as indicating any non-claimed element as essential to the practice of the disclosure.

Preferred embodiments of this disclosure are described herein, including the best mode known to the inventors for carrying out the disclosure. Variations of those preferred embodiments may become apparent to those of ordinary skill in the art upon reading the foregoing description. The inventors expect skilled artisans to employ such variations as appropriate and the inventors intend for the disclosure to be practiced otherwise than as specifically described herein. Accordingly, this disclosure includes all modifications and equivalents of the subject matter recited in the claims appended hereto as permitted by applicable law. Moreover,

any combination of the above-described elements in all possible variations thereof is encompassed by the disclosure unless otherwise indicated herein or otherwise clearly contradicted by context.

All references, including publications, patent applications and patents, cited herein are hereby incorporated by reference to the same extent as if each reference were individually and specifically indicated to be incorporated by reference and were set forth in its entirety herein.

What is claimed is:

1. A computer-implemented method for conducting a transaction for an item, the computer-implemented method comprising:

receiving, by one or more computer systems configured with specific computer executable instructions, from a user device associated with a consumer, a request to view items available for purchase from a set of pre-stocked kiosks, the request including a location of the user device;

identifying a subset of the set of pre-stocked kiosks that are within a predetermined proximity of the location of the user device;

transmitting a query, to each kiosk in the subset of the kiosks, requesting a list of items available at the kiosk;

generating a list of items available at the subset of the kiosks from one or more responses to the transmitted query;

providing, to the user device, the list of items available at the subset of the kiosks; receiving a request from the consumer to conduct a transaction for an item of the list of items;

receiving a query response, from each kiosk in the subset of the kiosks, with a storage status of the item for each kiosk in the subset;

identifying a plurality of kiosks in the subset of the kiosks that are pre-stocked with the item based at least in part on the storage status from each kiosk;

transmitting to the consumer a list of the identified plurality of kiosks, the list including a corresponding location for each of the identified plurality of kiosks;

receiving a selection from the consumer of a designated kiosk from the list;

indicating to the consumer that the item has been reserved at the designated kiosk;

subsequent to the consumer initiating retrieval of the item from the designated kiosk, receiving a communication from the designated kiosk to verify an identity of the consumer based at least in part on the request;

identifying, from account information stored by the one or more computer systems associated with the consumer, pre-registered payment information;

generating a code to be used for retrieval of the item from the designated kiosk and providing the code to the user device;

upon receiving the code from the designated kiosk, providing instructions to the designated kiosk to dispense the item, wherein the code is transmitted to the designated kiosk by the user device; and

using the payment information to initiate a payment process for the item to complete the transaction.

2. The computer-implemented method of claim **1**, further comprising:

upon determining the item is excluded from the list of items available at the subset of the set of pre-stocked kiosks,

transmitting to the consumer a list of the subset of the set of pre-stocked kiosks that are within the predetermined proximity of the location of the consumer;

receiving a selection from the consumer of a designated kiosk from the list of the subset of the set of pre-stocked kiosks;

instructing delivery to a distribution agent of a consolidated shipment of items including the item for which the consumer requested that a transaction be conducted; and

following delivery by the distribution agent of the item to the designated kiosk, instructing the designated kiosk to reserve the item for retrieval by the consumer.

3. The computer-implemented method of claim **1**, wherein the request to view items available for purchase includes global positioning system coordinates that are automatically determined by the user device.

4. The computer-implemented method of claim **1**, further comprising:

receiving account information associated with a plurality of consumers;

receiving transaction history information associated with one or more transactions conducted for one or more consumers in the plurality of consumers; and

analyzing the transaction history information and account information to identify one or more items with which to pre-stock at least one kiosk.

5. A computer-implemented method comprising:

upon receiving a request from a user device, transmitting a query, to each kiosk in a plurality of geographically distributed kiosks within a predetermined distance from the user device, requesting a storage status of individual items in a plurality of items in each kiosk;

receiving a query response, from each kiosk, with the storage status of the individual items in the plurality of items in each kiosk;

generating, based at least in part on the query responses received from the plurality of geographically distributed kiosks, a list of available items from the plurality of geographically distributed kiosks;

providing the list of available items from the plurality of geographically distributed kiosks to the user device;

receiving a request from the user device for an item in the list of available items;

identifying a subset of kiosks having the item from the plurality of geographically distributed kiosks based at least in part on the request and the query response;

transmitting a response to the user device including the identified subset of kiosks and a corresponding location for each kiosk in the subset of kiosks;

receiving a selection from the user device of a designated kiosk from the subset of kiosks;

transmitting a reservation request to the designated kiosk to reserve the item in the designated kiosk;

notifying the user device that the item is reserved at the designated kiosk;

generating a code to be associated with the reservation request;

transmitting the code to the user device; and

upon receiving an indication that the user device has communicated the code to the designated kiosk, causing the designated kiosk to distribute the item.

6. The computer-implemented method of claim **5**, further comprising:

receiving a location designated by a user, wherein identifying the subset of kiosks comprises identifying which kiosks from the plurality of geographically dis-

tributed kiosks are within a predetermined proximity of the location designated by the user, the subset of kiosks from the plurality of geographically distributed kiosks identified based at least in part on being within the predetermined proximity of the location designated by the user.

7. The computer-implemented method of claim **5**, wherein the request for the item is received via a communications network from at least one of a device utilized by a user or a retail network site utilized by a user.

8. The computer-implemented method of claim **5**, wherein the reservation request identifies a predetermined amount of time for retrieval of the item from the designated kiosk.

9. A system comprising:

a data store configured to store transaction history information for one or more items; and

a computing device comprising a processor device and a memory, the computing device in communication with the data store and configured to at least:

select, based at least in part on the transaction history information, one or more items to be pre-stored in each kiosk of a plurality of kiosks;

instruct delivery of the one or more items by a distribution agent to each kiosk of a plurality of kiosks;

receive, from a user device, a request to view available items, the request including geographic location information related to the user device;

identify a subset of the plurality of kiosks within a predetermined distance from the user device;

transmit a query, to each kiosk in the subset of the plurality of kiosks, requesting a storage status of individual items in each kiosk;

receive a query response, from each kiosk in the plurality of kiosks, with the storage status of the individual items in each kiosk;

aggregate the storage status of the individual items in each kiosk into a list of items available within the predetermined distance from the user device;

provide the list of items available to the user device;

receive a request from the user device for an item from the list of items available;

transmit a response to the user device with information identifying at least one kiosk of the subset of kiosks having the requested item in stock and a corresponding location for the at least one kiosk;

receive a selection from the user device of a designated kiosk from the at least one kiosk;

instruct delivery of the requested item, along with other items selected to be stored in the designated kiosk, by the distribution agent to the designated kiosk;

instruct the designated kiosk to reserve the requested item for the user device;

provide a notification to the user device that the requested item is stored at the designated kiosk, the notification including a code to be used for retrieval of the item from the designated kiosk; and

upon receiving an indication that the code has been provided to the designated kiosk by the user device, send instructions to the designated kiosk to distribute the requested item.

10. The system of claim **9**, wherein the designated kiosk is associated with a preferred item provider.

11. The system of claim **10**, wherein the user device is provided a discount on an item offered by the item provider in exchange for selecting the designated kiosk associated with the item provider.

12. The system of claim **9**, wherein the computing device is further configured to at least:

receive a current inventory record for the designated kiosk from the distribution agent, wherein the current inventory record includes transaction information associated with items stored in the designated kiosk.

13. The system of claim **12**, wherein the computing device is further configured to at least instruct the distribution agent to deliver the requested item to the user device.

14. The system of claim **12**, wherein the computing device is further configured to at least receive a repair notification for the designated kiosk from the distribution agent.

15. A non-transitory computer-readable medium storing computer-executable instructions that, when executed by a computer system, configure the computer system to perform operations comprising:

receiving at least one of transaction history information or inventory information for a plurality of items;

selecting, from the plurality of items, one or more items to be delivered from an inventory entity to each kiosk of a plurality of kiosks, wherein the selecting is based at least in part on the at least one of transaction history information or inventory information;

generating instructions for a distribution agent to receive the one or more items from the inventory entity and deliver the one or more items to each kiosk of the plurality of kiosks;

providing, to the plurality of kiosks, information associated with the instructions generated for the distribution agent, wherein each kiosk in the plurality of kiosks is placed in a geographical location to autonomously distribute the one or more items to a plurality of consumers, causing each kiosk to be pre-stocked with the one or more items;

in response to receiving, from a user device, a request to view a list of available items, identifying a subset of the plurality of kiosks within an indicated distance from the user device;

providing, to the user device, an aggregated list of the one or more items delivered to each kiosk of the subset of the plurality of kiosks;

receiving a request from a consumer to conduct a transaction for an item from the aggregated list;

identifying one or more kiosks in the subset of the plurality of kiosks that has been delivered the item;

generating a list for the consumer of the identified one or more kiosks, the list including a corresponding location for each of the identified one or more of kiosks;

receiving a selection of a designated kiosk from the list;

generating a code to be used in retrieval of the item from the aggregated list, the code being provided to the user device; and

upon detecting that the code has been transmitted by the user device to the designated kiosk, instructing the designated kiosk to release the item to the consumer.

16. The non-transitory computer-readable medium of claim **15**, wherein the transaction history information includes information associated with at least the plurality of items and the plurality of kiosks.

17. The non-transitory computer-readable medium of claim **16**, wherein the operations further comprise:

determining a quantity for each of the selected one or more items to be delivered to each kiosk in the plurality of kiosks based at least in part on at least one of the transaction history information or a geographical location of each kiosk in the plurality of kiosks.

18. The non-transitory computer-readable medium of claim 17, wherein the operations further comprise:

transmitting a reservation request to the designated kiosk to reserve the item at the designated kiosk;

generating a message for the consumer indicating that the item is reserved for the consumer at the designated kiosk; and

initiating a payment process to complete the transaction when the consumer initiates retrieval of the item from the designated kiosk.

19. The non-transitory computer-readable medium of claim 18, wherein the operations further comprise:

updating the transaction history based at least in part on the completed transaction; and

determining an updated quantity of the item to be delivered to the designated kiosk.

20. The computer-implemented method of claim 1, wherein the communication from the designated kiosk to verify the identity of the consumer is login information associated with the account information stored by the one or more computer systems.

21. The computer-implemented method of claim 5, wherein the code is communicated to the designated kiosk by user device via a short-range wireless communication.

22. The computer-implemented method of claim 5, wherein the code is presented on the user device via a mobile application when the user device is detected as being in proximity of the designated kiosk.

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